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ABSTRACT

This volume contains the following 19 papers delivered at a national conference on the design of assessment of vocational education: "The National Assessment of Vocational Education: An Introduction" (Gilbert T. Sewall); "Vocational Education--Opportunity and Challenge: Perspectives on the National Assessment of Vocational Education" (Robert E. Taylor); "Access to Quality Vocational Education" (Charles S. Benson); "Access to Quality Vocational Education: A Sex Equity Perspective" (Rebecca S. Douglass); "Evaluating the Special Populations and Equity Provisions of Federal Vocational Education Legislation" (L. Allen Phelps); "Comments on Access to Quality Vocational Education" (Chui Lim Tsang); "Vocational Education Policy and Economic Development: Balancing Short-Term and Long-Term Needs" (Patricia M. Flynn); "Assessing the Impact of the Carl D. Perkins Vocational Education Act: Economic Development Issues" (David W. Stevens); "Comments on Vocational Education and Economic Development" (Gloria A. Ruth); "Policy Issues in the Governance of Vocational Education" (John E. S. Lawrence); "Coordination of Vocational Education and Manpower Training Programs" (Paul E. Peterson and Barry G. Rabe); "Comments on State and Local Governance and Coordination" (Robert P. Sorensen); "Academic Education and Occupational Training" (John H. Bishop); "Determinants of Excellence in Vocational Education" (Stuart A. Rosenfeld); "Comments on Academic Skills and Occupational Training" (Ellen Summerfield); "Analyzing the Implementation of Federal Vocational Education Policy: The Perkins Act of 1984" (Richard F. Elmore); "The Federal Role in Vocational Education" (E. Gareth Hoachlander); "Comments on the Federal Role in Vocational Education and the Implementation of the Carl D. Perkins Act: A Discussion" (Marion B. W. Holmes); and "Comments on the Federal Role in Change" (T. Popkewitz); (3) "Lessons from a Comprehensive School System for Curriculum Theory and Research" (D. Kallos, U. P. Lundgren); and (4) "The Politics of Middle-Class Success in an Inner-City Public School" (R. T. Sieber). (EDS)

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DESIGN PAPERS
FOR THE NATIONAL ASSESSMENT OF VOCATIONAL EDUCATION

NATIONAL ASSESSMENT OF VOCATIONAL EDUCATION
UNITED STATES DEPARTMENT OF EDUCATION

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FOREWORD

The National Assessment of Vocational Education (NAVE) intends to publish papers and the results of selected research projects conducted throughout the course of its work. These publications will be in addition to the reports that the Carl D. Perkins Act (P.L. 98-524) requires the U.S. Department of Education to submit to Congress on its assessment of vocational education. This volume is the first such publication.

NAVE staff believe that this and other publications emerging from the National Assessment contain information and perspectives on vocational education that may be useful to a wide range of policymakers, practitioners, and researchers who are concerned with the status of vocational education in the nation. Additionally, we hope that these publications will stimulate ongoing consideration of the role of vocational education in the nation's education and training systems. Copies of reports can be obtained by writing to the National Assessment of Vocational Education, Department of Education, 400 Maryland Avenue, S.W., Room 3135/FOB6, Washington, D.C. 20202.

John G. Wirt, Director
National Assessment of
Vocational Education

PREFACE

The Carl D. Perkins Vocational Education Act (P.L. 98-524), enacted by Congress in October 1984, requires that the U.S. Department of Education conduct a National Assessment of Vocational Education. Section 403 of the Act mandates that the Assessment provide the Congress with descriptions and evaluations on the following topics:

- The vocational services delivered under the Act,
- The effects of the Act on modernizing the nation's vocational education system,
- The resources required to meet the nation's job training needs,
- The coordination of vocational education with employment and training activities in the states,
- The impacts of vocational education on participants' academic skills and employment opportunities,
- The effectiveness of vocational education programs for persons with limited English proficiency,
- The coordination of vocational education for disadvantaged and handicapped persons,
- The skills and competencies identified by states to assess their vocational programs, and
- The effectiveness of federal bilingual vocational training programs.

As these topics suggest, Congress has called for a broad-ranging analysis of the status and accomplishments of vocational education in the larger context of the nation's educational and employment training needs and activities. The mandate focuses specific attention on (1) the capacity of vocational education to address the educational and training needs of special populations such as disadvantaged, handicapped, limited English proficient, and other persons whose educational achievements and labor market success have been affected by limited access to high-quality education and training programs; (2) the responsiveness of vocational education to the changing labor market; (3) the extent to which vocational education contributes to achievement of the nation's broader job training and economic development goals; and (4) the performance of states in implementing the intent of the Act. Interim reports of findings are due to Congress in January and July 1988, with a final report to be submitted in January 1989.

To assist in developing a research agenda for responding to Congress' mandate, staff of the National Assessment of Vocational Education (NAVE) invited a number of noted researchers and vocational education practitioners to develop papers and participate in a public conference on the condition of vocational education in the United States. The conference was convened in Washington, D.C., on September 11 and 12, 1986. The intent of NAVE staff in holding the conference was to provide a forum in which vocational educators, researchers, and constituents might articulate major issues in vocational education and offer recommendations concerning strategies for addressing those issues through the work of the Assessment.

NAVE staff requested invited participants to address one of six broad topics that reflect the charge of the congressional mandate. The conference was organized around these six areas, with each session including presentations of papers developed by participants and comments on those papers and other germane topics by invited discussants. Additionally, open discussions followed each session. This structure permitted NAVE staff to hear a variety of perspectives on substantive and methodological issues important to assessing the condition and effectiveness of vocational education and thus facilitated their development of the Study Plan for the National Assessment of Vocational Education, which was transmitted to Congress in December 1986.

While NAVE staff selected the conference topics and participants who would address each topic, each of the persons who agreed to participate was encouraged to set forth his or her views based on prior research or practice relevant to the vocational education enterprise. Additionally, to ensure the broadest possible representation of interests and points of view, NAVE staff selected participants to achieve diversity in backgrounds and perspectives on education and employment training. The conference topics and participants included the following:

Vocational Education: Opportunity and Challenge

Gilbert T. Sewall
Robert E. Taylor

Access to Quality Vocational Education

Charles S. Benson
Rebecca S. Douglass
L. Allen Phelps
Chui Lim Tsang

Vocational Education and Economic Development

Patricia M. Flynn
David W. Stevens
Gloria A. Ruth

State and Local Governance and Coordination

John E. S. Lawrence
Paul E. Peterson
Robert P. Sorensen

Academic Skills and Occupational Training

John H. Bishop
Stuart A. Rosenfeld
Ellen Summerfield

The Federal Role In Vocational Education and Implementation of the Carl D. Perkins Act

Richard F. Elmore
E. Gareth Hoachlander
Marion B. W. Holmes
Charles W. Radcliffe

In addition to the immediate interest in obtaining information and perspectives on vocational education from a broad range of persons regarding the status and future of vocational education for consideration in developing the study plan, NAVE staff intended that the conference, and this volume of papers based on the conference, will serve as an impetus to ongoing, high quality research on vocational education throughout the period of the Assessment and beyond.

The Perkins Act was enacted at a critical period for vocational education. Among the challenges and opportunities faced by the enterprise are a broad national commitment to educational reform at all levels, major changes in the nation's labor market and economic conditions, and a widespread perception that the appropriate role of vocational education in meeting the future educational and training requirements of the nation needs careful analysis. The goal of NAVE staff is to plan and conduct an Assessment that will provide federal policymakers with the information on which to base decisionmaking concerning the future federal role in the enterprise. This volume of design papers represents one of the NAVE's early tasks in pursuit of this goal, and we hope that the papers will stimulate interest in and consideration of issues in vocational education that will facilitate sound decisionmaking at all levels of the enterprise.

This volume of design papers is intended as a companion to the "Study Plan for the National Assessment of Vocational Education," which was transmitted to the Congress in December 1986. Copies of both volumes can be obtained from the National Assessment of Vocational Education.

The NAVE staff acknowledges the assistance provided by staff of Policy Studies Associates, Inc., including Becky Jon Hayward, Nancy E. Adelman, Christene P. Cleland, Elizabeth R. Reisner, Michael D. Tashjian, Joanne Bogart, and Linda K. Bailey in covening the conference and preparing this volume. We would also like to thank conference participants for their thoughtful preparation of the papers contained herein.

John G. Wirt, Director
National Assessment of Vocational
Education
February 1987

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I. VOCATIONAL EDUCATION: OPPORTUNITY AND CHALLENGE

The National Assessment of Vocational Education: An Introduction

Gilbert T. Sewall

Vocational Education—Opportunity and Challenge: Perspectives on the National Assessment of Vocational Education

Robert E. Taylor

THE NATIONAL ASSESSMENT OF VOCATIONAL EDUCATION: AN INTRODUCTION

Gilbert T. Sewall
Director, Educational Excellence Network
Research Fellow, Teachers College, Columbia University

> I must study politics and war that my sons may have liberty to study mathematics and philosophy. My sons ought to study mathematics and philosophy, geography, natural history, naval architecture, navigation, commerce, and agriculture, in order to give their children a right to study painting, poetry, music, architecture, statuary, tapestry, and porcelain.
>
> — John Adams, 1780

As a nation, we value both liberal and vocational subjects. But as John Adams' remarks indicate, the relationship between the two has never been an easy or simple one. Yet the association is particularly germane at the moment. Recently, a reform movement stressing the advancement of intellect and character has had appeal to many local, state, and federal education leaders. Now an omnibus federal review of vocational education is set to begin. By most accounts, all is not well in the arena of vocational education, as indicated in a 1985 report from the Committee for Economic Development. "Unfortunately," it concluded, "whether measured by future earnings, job placement, or employment success, there is today little evidence that vocational education is either meeting the needs of students or of the employers who are expected to hire them."

This introductory working paper does not purport to examine in depth any micro-area of the far-flung vocational enterprise, including all of its millions of clients and all of its billions of federal, state, and local dollars. Nor does it provide an encyclopedia of the possible areas of inquiry for the National Assessment. Instead, it offers some initial thoughts about the task at hand, assuming that the educational reform impulses now centering around academic delivery, student performance, and outcomes are valid and constructive responses to the lax standards of the recent past.

The main cohort of interest to this paper is the high school population that is not college bound. To be sure, many of these students will someday enter a vocational program in a postsecondary technical institute, community college, or proprietary school. But they will not advance into a baccalaureate program. For such students, a battle currently rages between those who advocate a classical academic program for all students and those who favor a tracking system, strictly construed, at the secondary level.

As the National Assessment of Vocational Education begins, the Department of Education will be forced to chart some murky—even polluted—waters. The realm of vocational education is not well monitored or, among some policymakers, even understood. In this area of education, which straddles secondary and postsecondary institutions, aversion to performance standards, accountability, and evaluation remains profound.

The impression of general resistance to change or criticism, especially in the case of the high school vocational education program, also remains profound. In August 1986, for example, one of the nation's leading representatives of vocational education termed the current academic reform movement the greatest challenge to vocational education in this decade. In the end, states and district-level vocational teachers will determine quality in the field. Still, the coming Assessment provides an opportunity for education observers to welcome better information and sturdier theory about this huge educational component.

Contemporary reform cannot realistically or properly ignore vocational subjects in educational improvement efforts. First, they are deeply rooted in the secondary and postsecondary apparatus, and second, in select forms they pay real educational benefits. Essentialists and other nonnegotiating advocates of the liberal arts subjects cannot wish away human limits: it makes little pedagogic or psychological sense to flog 14- and 16-year-olds who have been near the bottom of the academic barrel since third or sixth grade into purely academic courses, where demoralization is likely or inevitable.

But what is the alternative: to simply feed these young people, teach birth control and cooking, keep them off the streets until they drop out or go into the Army? Much of the answer lies in the promise of vocational education but a kind of vocational education building on academic skills and respect for the cognitive foundations of effective career training.

The chance to rethink the vocational program seems at hand. It is therefore useful first to disabuse educators of four common misconceptions about the so-called excellence movement of the 1980s.

One, the excellence movement is not elitist, concerned only with the welfare of the academically tracked and college bound. In fact, it maintains that low-income, nonwhite children are the chief victims of low school expectations and standards. Two, the excellence movement is concerned with what all children carry away from formal education, realizing that the high school diploma is in many cases a terminal degree. Three, the excellence movement is anxious to stretch all students to their utmost individual capacities, through the transmission of basic subjects and attitudes necessary to success in the workplace; it does not advocate that we force children through narrowly defined curricula without regard to their special needs.

Four, for the excellence movement, technical and vocational education is not the enemy. The argument is, rather, that schools should try to provide a liberal arts base, and something called "cognitive competence."

Admittedly, some education researchers and philosophers who travel with this so-called movement (which, in fact, is a loose confederation with contradictory views in such areas as moral education, private schooling, parental choice, the content of basic skills, and more) are scholastic purists. They would have the schools teach the same subjects to students of all abilities, backgrounds, and interests. But as Chester E. Finn, Jr., has suggested, the main current of the excellence movement merely endorses a core curriculum founded on basic skills and literacy, flexible enough to suit individual differences and capabilities.

Let me declare my academic biases. It is advisable, I believe, to try to postpone occupationally specific vocational education—ideally, until after high school graduation. An academic foundation and self-discipline are perhaps the best initial ingredients for personal and career success, especially in a world where companies do much on-the-job training and staff development for their employees, and where the particulars of job tasks during a single career may vary tremendously.

Lest we forget, 500 years ago, during the Renaissance, the liberal arts and sciences emerged as a revolutionary curriculum, reacting against sterile academicians—the scholastics, theologians, and lawyers—who controlled knowledge and its formal dissemination. The liberal arts were said to be more relevant, an expression of human possibilities, to equip people for living. Then and now, these generative subjects—and the basic skills they encourage—provide a necessary foundation for the successful transmission of more instrumental and utilitarian subject matter.

Vocational interests seem to have forgotten or lost sight of the universal applications of basic academic subjects. This lapse gives rise to some serious questions of intent and ends. Why do some vocational interests fail to celebrate basic language or arithmetic skills—not to mention the basis of real decisionmaking: solving for an algebraic unknown? Why does the question, "What irreducible basics of academic education should every citizen carry away from formal schooling?" provoke hedging, consternation, or hostility in otherwise intelligent, decent, and well-meaning vocational educators?

Beyond the academic base that virtually all students need to successfully enter and adapt to the workplace, employers are increasingly alert to the values, attitudes, and habits that a high school graduate needs. A 1983 study in metropolitan Los Angeles conducted by Wellford W. Wilms of the University of California at Los Angeles concluded that employers regarded work habits and positive attitudes as essential to success, especially when entry-level skills were low. The habits and attitudes that the surveyed firms had in mind included the ability to come to work on time, follow basic rules, work hard, and dress appropriately. Sixty-three percent of those polled considered such habits and attitudes more important than technical or linguistic and computational abilities. Wilms concluded that such a response indicated that employers had trouble finding workers who exhibited even these minimal functioning qualifications.

Discounting the very real problem of negative community values that might impede positive character development, a question arises over the degree to which vocational programs try to inculcate and advance the kinds of behavior that help ensure workplace entry and adaptation. As with academic skills, the low behavioral standards tolerated in much of vocational education seem to grow out of low expectations among teachers, parents, and students alike—all groups likely to be distant or even alienated from the schools' central scholastic missions.

Other papers for this Assessment include elegant histories of vocational education. But to be brief, during the last 100 years, and especially in the last 20, the vocational educational system has accreted into a bewildering array of programs and missions. It reflects a series of state and federal efforts to stamp out the scourge of child labor and supplant the factory apprentice system, fight unemployment and poverty, counteract juvenile alienation, train the disabled, and obliterate sex bias in the workplace. To be sure, it is not vocational educators themselves who have piled on all the set-asides and tried to make vocational education a chariot of social engineering. Many vocational education officials in fact complain of an overloaded mission. The pressure has come from outside groups, representing the interests of self-identified and myriad factions wanting special attention in education for the workplace. As a result, the current authorization of the Vocational Education Act, the Perkins Act of 1984, is a maze of ambiguous objectives guarded by fierce advocates of the status quo, or more exactly, the status quo to be supplemented by larger donations of public money.

In 1917, with the Smith-Hughes Act, Washington took its first plunge into local school policy by enticing states, through financial incentives, to establish vocational courses. In the early decades of the century, an outstanding system of trade education developed, at least in the cities, and many vocational schools developed distinguished reputations. But the Smith-Hughes Act began to separate manual, industrial, clerical, agricultural, and other vocational arts from the armature of the school system, creating a highly integrated system stretching from the federal to state to local levels. The vocational lobby, then, became the nation's first educational categorical and special interest group—well organized, vertically integrated, autonomous, and sensitive—that Congress and state legislatures respond to enthusiastically, resulting in billions of dollars in salaries spread across the land. Today, the majority of the vocational education community is isolated from and defensive about the central scholastic responsibilities of the nation's schools.

Many educators who grew up inside the system and now guide it are themselves incompletely educated in the liberal arts and sciences. Among activity-minded educators impatient with pure scholastic content, the anti-intellectual current that the historian Richard Hofstadter complained of 25 years ago shows few signs of abatement. Vocationalism tends to arrive at reductive utilitarianism, considering a marketable job skill a sufficient objective in the education of the young.

It is time for the vocational education community to face up to the connection between basic and occupational skills, and the comparative value of vocational education at the secondary level. New criteria for evaluating effective vocational education should at least be explored. What are the pre-occupational skills that all students should master before they stand for a high school diploma or look for a job? Some are obvious: mechanical drawing, typing, accounting. Just as obvious: oral communication, literacy, numeracy. Not thought about enough: accuracy, reliability, civility. Students have a right to be taught how to learn, where to go for answers, how to judge the answers that are given. No normal young person should enter occupational programs without demonstrating minimal levels of literacy, numeracy, and self-discipline.

* * * * * *

The following areas of debate seem crucial for the ultimate success and usefulness of this National Assessment.

WHAT IS VOCATIONAL EDUCATION? What is meant by the term? In a national assessment of vocational education, the matters of definition, description, and data collection are fundamental. What is the topography of the secondary program? Of the postsecondary system? As University of California Professor Charles E. Benson suggests, much is made of access. But access to what?

We know, for example, that some 90 percent of high school students take some kind of vocational education course between ninth and twelfth grade. Then, everything becomes spongy. What is meant by the "vocational track?" How many students participate, in what, and to what degree? High school students rarely seem to take anything resembling a coherent vocational program. As Anne Lewis recently reported in Phi Delta Kappan, data in vocational education have been so inaccurate (or confusing) that state-reported enrollments "have sometimes exceeded a state's total high school enrollment."

What is vocational education and what is mere caretaking? When do courses have validity and when do they become simple mechanisms to keep teenagers off the streets and highways? What items of general education carry the voc-ed flag? What, in fact, is the "general track" and how does it complement or differ from vocational education? At some point in the game, vocational education bleeds into dreadful life-adjustment courses; into part-time, minimum wage jobs during school hours disguised as work-study programs; and into warehouses for unruly teenagers. Even textbooks are patronizing in content. The current Prentice-Hall secondary catalogue's home economics program promises a curriculum in "complete living." Its texts emphasize caring, human interdependency, and recognition of sound nutritional principles. The catalaogue's sales message seems to suggest that the children in the program need not perform abstract mental operations nor think beyond Leo Buscaglia happy-day slogans.

Vocational education needs a new taxonomy and data base. The Assessment must determine what the far-flung universe of vocational education consists of, e.g., who participates, to what extent, in what courses, with what standards, goals, and resources. What are different states doing? What patterns of participation, content, and finance emerge at the national level?

HOW EFFECTIVE IS VOCATIONAL EDUCATION? What research, if any, verifies the effectiveness of vocational education in advancing student aptitude and achievement—or in accelerating careers—beyond a limited skills realm. Without strong theoretical foundations, vocational education is ordinarily justified by impoverished progressive canons stressing practical training. A corollary asserts that academic subject matter is more interesting when folded into skills education rather than taught directly. Much of the field is adrift with the doctrine that learning can and should be fun, hands-on, experimental, affective, mentally untaxing, and capable of being done without mental effort or ratiocination. Such a view is not likely to advance criteria of vocational adequacy and general curricular excellence.

Wide gaps persist between desired and real student outcomes in the vocational education enterprise. "Only in the areas of business and office skills does there appear to be a direct link between the vocational education that students receive in school and their future careers," notes the Committee for Economic Development. What genuine relationship, if any, exists between vocational training and career choices, advancement, and satisfaction? What kinds of work-study pay off in the long run? To what degree is successful vocational education linked to technological minima and equipment support? And where is effectiveness to be found? How do comprehensive high school vocational education programs stack up with those of area centers? These are important questions, ones that neither vocational education leaders nor Congress has considered carefully enough.

How can vocational education become more effective? A beginning step would be full and frank review of the comprehensive high school vocational program because, it seems, that's where the most severe qualitative problems lie. Low expectations infect many high school programs. The industrial museums that often pass for vocational classrooms in comprehensive high schools seem to be (ever more so) crucibles of unemployment, the reverse of what they are intended to be.

Moreover, high school is the place where students ordinarily get introduced to trade and career education. In schools where the high school diploma is the terminal degree for the majority of the student body, pupils tend to track away from formal academic learning altogether--and forever--by the tenth or eleventh grade, not always with a sufficient base in the generative subjects. For the academically unable and the academically resistant, high school vocational education often acts as a simple replacement for rather than an extension of academic education.

Conversely, and this is an important distinction, postsecondary and adult vocational education programs differ significantly from high schools in ethos. Older students usually have internal objectives--and have learned about life at the minimum wage the hard way. For them, vocational education has direct correspondence with entry-level employment and the fundamentals of a job.

Local school leaders need help in recognizing where vocational education helps and hinders. Superintendents and principals need to be apprised of the ingredients of vocational education excellence. The Assessment should publish a compendium of "what works," a comprehensive reference guide to effectiveness in the field. Such a guide would ideally include a fresh theory of vocational education.

WHAT STRUCTURE? Researchers should explore what options the federal government might have to encourage simplification of the structure of vocational education. At the secondary and postsecondary levels, a tangled, irrational, and internally competitive system has created high school programs, career centers, technical high schools, postsecondary technical centers, community colleges, and occupational skills centers. How can vocational education avoid duplication and streamline its organization? Or putting it starkly, what might grow and what might go?

WHO WILL BE SERVED? Researchers should study the value of set-asides for special populations. Not so surprisingly, vocational educators have laid special claims on the undereducated, inarticulate, bored, and less than able student. The vocational mission has increasingly centered on overcoming various kinds of student backgrounds and handicaps. It has promised cures for the achievement problems of disadvantaged and alienated students, and new channels into work for women. But we know little or nothing of the actual benefits of the various categorical subsets of vocational education--or the possibility that they direct limited resources away from "nonspecial" groups that might benefit in ways more conducive to economic production and civic activity. Are set-asides inducements to vocational improvement or politically motivated largess?

Conclusion

The Department of Education can analyze and Congress can fund vocational education in such ways as to advance what they consider to be its best aspects. But before the nation can spin fine policy, it would be a good idea to draw accurate contours of the vocational terrain, describe what works, draw up models for programmatic and financial improvements, and explain why certain forms of vocational education are national assets and others are national embarrassments. By demonstrating the successes and shortfalls of vocational education, the Assessment can allow policymakers, legislators, and education experts to become more knowledgeable, selective, and secure in the defense of a fortified vocational education program.

Of course, any changes in vocational education will depend to some degree on the initiatives of state and local governments. If states and localities want to pay for a thin porridge of home economics, cosmetology, car shop, and all the other dismal creations of vocational education, they have every right to direct their own public resources in that direction. But it would be folly to underestimate the multiplier and leverage of federal activity in a disordered field. The Assessment—even if it chooses to avoid prescriptions—can offer options and alternatives to the status quo. The Department of Education has the timely opportunity to demonstrate to Congress, corporate leaders, vocational education officers, state and local superintendents, principals, and the public how vocational education—through a more academic orientation, better planning, increased self-regulation, and higher expectations—can be a greater educational asset than it has become.

VOCATIONAL EDUCATION—OPPORTUNITY AND CHALLENGE: PERSPECTIVES ON THE NATIONAL ASSESSMENT OF VOCATIONAL EDUCATION

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Our American society faces a number of continuing challenges and opportunities in:

- providing international leadership;
- the market places of the world;
- its quest for excellence;
- delivering on the promise of the American dream of equality of opportunity; and
- maximal individual development for all our citizens.

Vocational education is a vital part of our national challenges and opportunities. Since 1917, the Congress has set forth a number of challenges and opportunities through a series of vocational education acts and amendments. Some priorities have shifted over the years; some have remained constant and their context has expanded and changed dramatically.

The nationwide vocational education enterprise has been directed to confront some of the most difficult and complex problems facing our nation:

- contributing to economic survival and sufficiency;
- improving equity and access; and
- achieving excellence in education and other elements of society.

Federal legislation in vocational education represents one of the longest involvements of the federal government in fostering educational improvements through state and local governments. During this period of almost seven decades there have been many changes in the economy, educational structures and processes, and the way federal and state relationships are viewed.

Clearly, the unique opportunity and challenge for this Assessment in a period of limited resources, an increasingly complex operational context, heightened expectations, and eroding extant data sets is how the Assessment can meet the congressional mandate, exceed it, positively impact on programs, and hopefully leave a legacy that has sharpened the questions, illuminated the issues, improved the data sets, and strengthened the continuing mechanisms for evaluation and improvement. The Assessment must not be thought of as a series of "interesting research questions" but rather a programmatic and coherent sense of the law's impact and influence on program outcomes and the vocational education enterprise itself. The Assessment should also provide guidance on the next level of needs in the further evolution and improvement of vocational education.

This is especially challenging for this Assessment since there is a hiatus in some of the most relevant and useful national data sets. In essence, even though there is cross-sectional data, there are no national data sets following students who were in school between 1983 and 1988. The gap is particularly vexing since it covers a time of major changes in all of American education, and in particular secondary education, with important implications for vocational education. Additional comments will be offered on this topic in the section of the paper entitled "Other Considerations."

This paper provides an overview of the major concerns in designing, conducting, and reporting the National Assessment of Vocational Education. I have provided a model for identifying some of the key issues and a construct for assessing the Carl Perkins Act and its consequences. Also included are research questions, variables, and selected data sets to illustrate the application of the construct. Finally, a limited number of recommendations for the Assessment effort are offered.

The Charge for the National Assessment

Recent reauthorizations of the public vocational education acts have built in a requirement for an independent assessment of the act and its consequences on the vocational education enterprise. These have resulted in reports that have been useful to the field in bringing about improvements, to the U.S. Department of Education (ED) in its administration of the program, and to Congress in shaping subsequent legislation. The Carl Perkins Vocational Education Act (Public Law 989-524, 1984, Title IV, Section 403, p. 2467) mandates such an assessment and sets forth minimal areas of descriptions and evaluations such as:

1. The vocational education activities and services delivered to the individuals who benefit from vocational education activities and services assisted under this Act, including the expansion of access to quality vocational education for individuals described in Section 201(b) and adults;

2. The impact of this Act in modernizing the Nation's vocational education system and expanding its capacity to meet the changing needs of the workplace;

3. The resources needed to meet adequately the Nation's job training needs;

4. The coordination of vocational education programs with employment training and economic development among the States;

5. The impact of vocational education programs on the achievement of academic skills and employment opportunities of students;

6. The coordination of vocational education and postsecondary programming for handicapped and disadvantaged individuals;

7. The skill and competency levels developed by States pursuant to Section 113(b);

8. The effectiveness of vocational education programs and services for individuals of limited English proficiency;

9. The effectiveness of bilingual vocational training, including bilingual vocational instructor training, to address the unmet needs of individuals of limited English proficiency.

The Act provides for independence of action, sets forth a timetable, and provides for necessary resources. Inputs from the Office of Vocational and Adult Education (OVAE) on its analysis of state plans and evaluations conducted under 113(b) are also requested.

The opportunity and challenge for this Assessment clearly are to comply with the law, but it should also provide additional relevant information and through its conduct impact positively on vocational education programs.

Problems and Issues in Vocational Education

Many of the issues surrounding the federal role in vocational education and the programs operating at the federal, state, and local levels are not new but, rather, are long standing. In some instances different groups with varying philosophies of government and education look at the same data bases and draw different conclusions with respect to vocational education. Some see the glass half empty; while others view it as half full. Hence, one can't help wondering if some of these issues could be resolved by more adequate data.

This phenomenon, coupled with vocational education's decentralization and diversity, led a long-term observer of the enterprise to note, "Anything you say about vocational education is true somewhere."

The questions from various groups about vocational education are as fundamental as:

Should there be vocational education in American public education? If so, what should be its purposes, operational mode, and whom should it serve? Is there a continuing federal role in vocational education? If so, what should be its characteristics and how can it be asserted to assure improved access and quality in all communities to all groups? Should the federal role be to provide a broad, durable construct and guidelines for all facets of vocational education, or should it be more sharply focused on certain aspects and vary in its emphasis and support on the basis of current need and performance? For example, is the federal interest best served by supporting key elements of the infrastructure, e.g., state boards, state administrative staff, advisory groups, and others, or should funds focus directly on program outcomes? Factors of governance, funds distribution by age and target groups, and "canons of evidence" are also under constant debate.

One of the long-standing concerns is the range in quality among programs in various communities. Without discouraging divergent approaches and innovation, how can the federal role be implemented to assure minimum standards and access to high quality programs that are relevant to the labor market in all communities? Is there political support for more directive and prescriptive measures?

All of this leads to the basic question: How can federal funds be invested to leverage maximum change and improvement in the least time, encourage state and local investments, and produce positive residual outcomes without negative side effects?

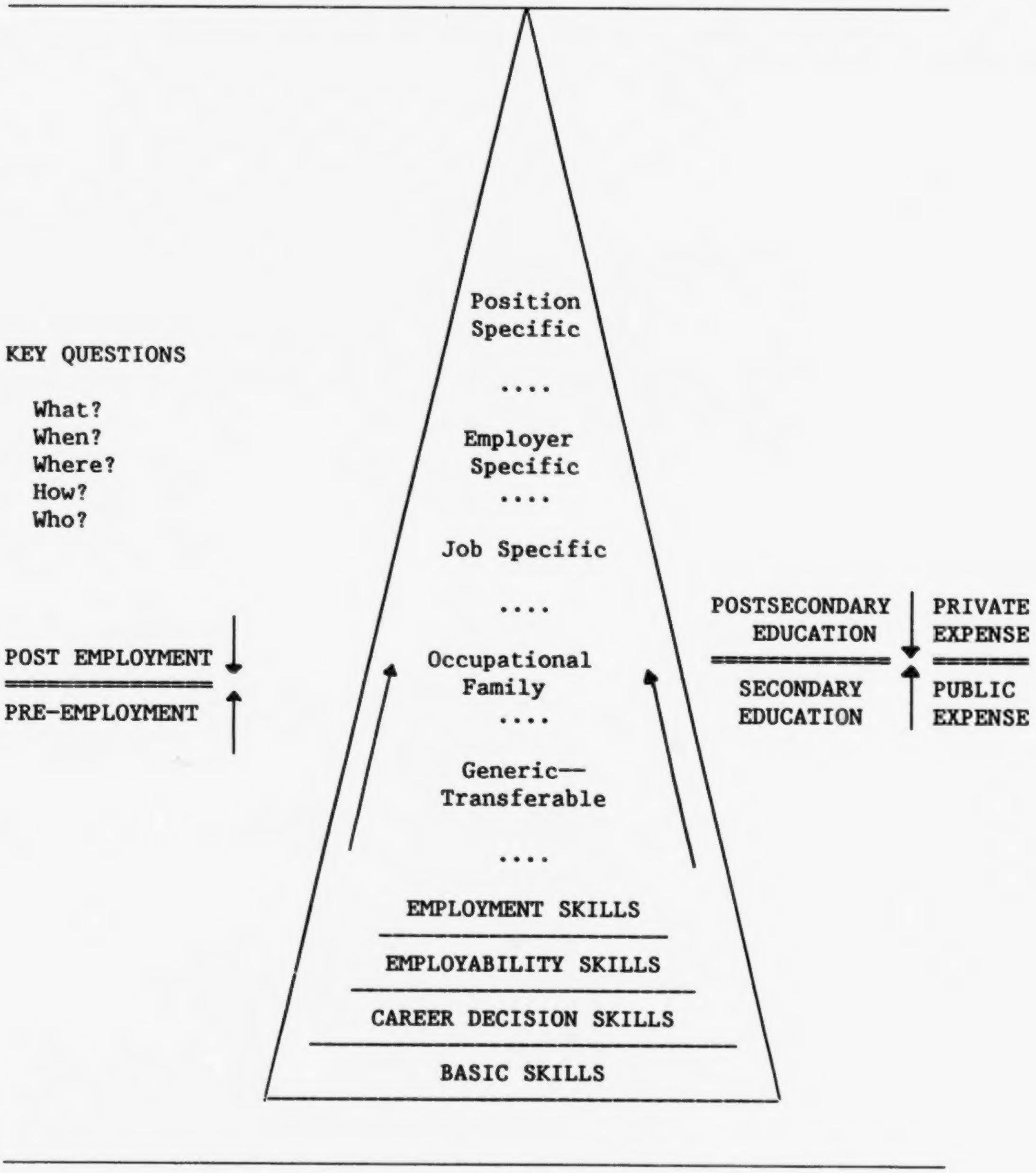
A Model of the Stages in Preparation for Employment

In a fundamental sense, many of the issues surrounding vocational education can be derived from Figure 1—Model of the Stages in Preparation for Employment.

While preparation for employment is not lock-step in sequence or compartmentalized in content, it has several recognized general components. Typically, preparation proceeds from the general to the more specific. It includes general education and basic skills, career decisionmaking skills, employability skills (knowledge of the world of work, attitude toward work, work habits, job seeking and retention skills) and employment skills. This latter group can be viewed as having several stages of development, each with increased specialization. They are generic—transferable, occupational family,

Figure 1

Model of the Stages in Preparation for Employment


Position Specific
....
Employer Specific
....
Job Specific
....
Occupational Family
....
Generic—Transferable
....
EMPLOYMENT SKILLS
EMPLOYABILITY SKILLS
CAREER DECISION SKILLS
BASIC SKILLS
KEY QUESTIONS
What?
When?
Where?
How?
Who?
POST EMPLOYMENT
PRE-EMPLOYMENT
POSTSECONDARY EDUCATION
SECONDARY EDUCATION
PRIVATE EXPENSE
PUBLIC EXPENSE

job specific, employer specific, and position specific. While the pedagogical questions and policy issues that can be derived from this model are almost limitless, the following are some of the more critical ones for the Assessment.

Key factors in programming these components include sequence, amount, breadth, depth, the nature of learning and teaching, the balance of theory and practice, age and grade level, and the like.

Among the fundamental policy issues are:

- Where does pre-employment preparation end and post-employment training begin? That is to say, what kind and amount of specific skills preparation should pre-employment contain if any?
- Looking at the governance and structure for delivering American education, another fundamental issue is where does the division of labor between secondary and postsecondary education occur? What kinds of articulation mechanisms are needed and how does one best provide for overall state or local governance and coordination of vocational education with general education and other employment and training systems? Should governance be uniform and should the federal government require certain structures to try to assure program outcomes?
- An equally significant but less overtly discussed issue is that of deciding what part of occupational preparation should be at public expense and what part should be paid for by employers or the individual? When provided at public expense, what is the appropriate role of various levels of government?
- Perhaps the most important issue is how/when does one differentiate preparation to accommodate the unique needs and abilities of individuals? Secondly, where/how among the needs of employers of different sizes and from different economic sectors and regions of the country does one accommodate differences in occupational skill content and levels?

Running throughout these issues is a continuous debate about labor market relevance, quality, equity, efficiency, and effectiveness. The appropriate role of local, state, and federal government, the responsibilities of employers, and the rights and obligations of individuals are constantly under review.

A Construct for the Assessment and Reauthorization

While the Assessment calls for descriptions and evaluations of various elements of vocational education under the current Act, in the author's view it also invites an analysis of the Act itself, its adequacy and appropriateness, efficiency and effectiveness.

A construct would be useful as a means of guiding, organizing, and classifying the Assessment's activities. It would also aid in conceptualizing, conducting, programming, and reporting on the Assessment. It should contribute to the formulation of research questions, identification of variables and data sources. To develop such a construct, it is instructive to review prior legislation and to rationalize its major elements.

Over time the federal role in vocational education legislation can be described as having four major elements:

1. Identifying national needs as federal priorities

2. Building essential capacity to impact on the priorities

3. Providing essential support services

4. Enabling provisions

The following is a brief historical perspective on examples for each of the four elements.

National Needs That Become Federal Priorities

Congress views itself as a problem solver. It provides oversight to various sectors of social, economic, and educational activity. From its analysis of these areas, it identifies critical national needs or problems. Consistent with its view of the appropriate federal role, it establishes these needs as federal priorities in legislation such as vocational education. Over the years these priorities have included expanding and improving vocational education, skill development for war mobilization, program quality, joint planning, improving access and equity, and strengthening the economy, to name a few. Currently, the federal concerns about vocational education appear to fall into three broad areas—equity, economics, and excellence (quality programs).

Building Essential Capacity to Impact on the Priorities

In formulating vocational education legislation, Congress assesses the capacity of the enterprise to deliver on the "new" priorities. The current and previous acts have included provisions for building capacity in the nationwide vocational education enterprise that was needed to strengthen the program's ability to carry out the "new" federal priorities and hopefully to remain capacitated (residual effects) and in improved readiness to solve these and future problems. Examples include personnel development, research and development, advisory mechanisms, and information on the labor market (NOICC-SOICC). More current examples would include establishing state technical panels, developing means of involving community-based organizations, and expanding state program improvement activities.

Some mechanisms established under capacity-building provisions have become essential support services in subsequent legislation. Examples of this are NOICC-SOICC and State Councils. An example of a capacity-building effort that was not continued was the graduate leadership development program. In the reauthorization, the Congress determines if sufficient capacity has been built and if the federal role has been completed or if continuing capacity development is essential to improve operation of the program.

Providing Essential Support Services

Supportive services that improve the ability of or provide essential information to key actors in vocational education to carry out the federal priorities have been an important component of federal legislation over the years. These have included administration and technical assistance from the federal office, national data systems (VEDS-DOVE), curriculum coordination centers, the National Center for Research in Vocational Education (NCRVE) and others. The Carl Perkins Act provides, for example, such support services as the federal office, NOICC-SOICC, NCRVE, and advisory groups (state and national).

Enabling Provisions

Enabling provisions are designed to channel federal dollars toward leveraging maximum change and improvement in vocational education, especially toward the goals of the current Act, and to stimulate state and local investments. For example, the priorities of equity, economics, and excellence are consistent with the current beliefs about improving vocational education and of the relationship of the federal government to state and local units. Factors such as residual effects (capacity), state differences, and others also enter into the formulation of enabling provisions.

These provisions specify how the funds are to be focused (e.g., matching and set-asides), administered, and accounted for. They typically establish or require criteria and reviews for certain decisions and may indicate how programs are to be reported and evaluated.

A vital dimension is the state plan, in which states analyze needs in terms of the Act's priorities, assess resources, establish priorities, and lay out a program plan for two to three years. The states currently are required to conduct hearings, and to seek advice from the State Council and others before the State Board submits the plan to the U.S. Department of Education for final approval.

Utilizing these four elements (federal priorities, capacity building, support services, enabling provisions), we can establish a construct that embraces both previous and current legislation. The construct (Figure 2) is made up of the four elements as the rows and the current priorities as the columns. This construct should be useful in establishing parameters, generating questions, establishing priorities, organizing and monitoring progress, and reporting the Assessment.

Figure 2

A Construct for Assessing
Federal Vocational Education Legislation

Elements	A	B	C
I. Federal Priorities	Equity	Economics	Excellence
II. Capacity Building	IIA		
III. Support Services		IIIB	
IV. Enabling Provisions			IVC

In applying the construct to the Assessment, it is important to remember that it has been easier to achieve agreement on the federal priorities (needs) and the needed educational capacity and support services than it has been to agree on the enabling provisions, since these provisions provide the framework for governing the program and distributing the funds. There are many special interest groups within vocational education and beyond who lobby intensively on key issues. For example, local educational interests want the maximum amount of funds to go to local schools directly and with as few restrictions as possible. Others believe all or increased funds should be "set aside" for serving various at-risk populations. Some think that investments in support services such as teacher education, state administration, research, curriculum development, advisory inputs, and labor market information, or in capacity building such as state technical committees are essential and provide more leverage in achieving the current set of federal priorities.

Prior reviews have not given enough attention to the category of enabling provisions. It is potentially the most powerful leverage point in the Act and in the Assessment. The Assessment should address which mechanisms have been most useful in bringing about change and improvement. Has it been matching requirements, set-asides, emphasis on at-risk populations, distribution criteria and/or formulas for fund allocation, state plans, hearings, advisory inputs, or required evaluations? Federal acts in other areas of education or other arenas of government should be reviewed to determine whether there are enabling provisions that may be more powerful and appropriate, such as the Job Training Partnership Act's 100 percent funding for certain target groups. However, caution should be exercised about the generalizability of provisions from one legislative authority to another because of differences in governance, administrative structure, operational context, and the substance of the priorities themselves.

In sum, the construct provides a means of framing the congressional charge (Section 403) for the Assessment and of establishing priorities and points of leverage. It also provides a means of classifying and communicating with reference to provisions of the Act and the programs it has fostered.

Applying the Construct to the Assessment

What are some generic questions that flow from the construct that would be useful in the Assessment? In a sense, the construct generates two sets of questions: (1) those that relate to Congress and the design of the law, and (2) that relate to the implementation and consequences of the law.

The Act

The first set of questions relates to the adequacy and efficacy of the Perkins Act itself. It presumes a burden on Congress and groups that influenced it to have written a "good law" (e.g., appropriate, timely, balanced, equitable).

For example, were the three priority areas—equity, economics, and excellence—the most needed and appropriate for the vocational education enterprise, and does the Act optimize the federal role in meeting individual and social needs? Is there a reasonable balance between expectations and resources? Are appropriate provisions made for building capacity where needed, and for support services to help the vocational education establishment meet the priorities of the law?

Are the enabling provisions the most powerful and economical way (consistent with the current view of federal-state-local relationships) to achieve maximum attainment in the least time, to encourage state and local investment, and to have further capacitated and strengthened the program?

Vocational Education Program

Issues emanating from the second set of generic questions for the program relate to the acceptance of and good faith efforts to give priority to implementing the Act's objectives and provisions. Do student outcome data reflect progress in attaining the Act's objectives? Has satisfactory progress been made in developing needed capacity, such as technical panels or use of community-based organizations? Are they mature and capacitated, or is additional development needed? What would be the residual effects (retained capacity) if federal support were terminated? Would state, local, or private sources maintain them? (Those same questions should be applied to program elements.) Have state program improvement dollars been effectively invested to enhance and extend existing capacity, e.g., teacher education, curriculum, upgrading instructors, and strengthening business, industry, labor, and general education linkages to carry out the new emphases in the law?

Have supporting services provided for in the Act responded efficiently and effectively? Are they all needed? Or are there others needed that are not included?

Are the enabling provisions functioning as envisioned? Are there unintended or negative consequences? Are there more powerful or suitable means of carrying out the intent of Congress?

Research Questions, Variables, and Selected Data Sets

A number of critical research questions are included in Appendix A. These questions are responsive to the congressional charge for the Assessment and are keyed to the cells in the construct. Recent and relevant studies and work underway on these questions are also included. These selected studies are illustrative, not exhaustive, of the extant data base undergirding the questions. Other authors have been asked to focus in depth on some of these questions for the design conference.

Other Considerations

There are other considerations and actors that should be attended to by the Assessment. The behaviors of Congress (e.g., appropriation levels) and ED (budget requests, implementation steps, and technical assistance) should also be reviewed. For example, has the administration requested funding for all the provisions? At what levels? If not, why?

Have all the provisions of the Act been implemented such as:

(1) Cooperative Demonstration Programs

(2) State Equipment Pools

(3) Demonstration Centers for the Retraining of Dislocated Workers

(4) Model Centers for Vocational Education for Older Individuals

(5) Industry-Education Partnerships for Training in High Technology Occupations

Generally, legislation is intended to be coherent and each provision focuses on critical aspects of the Act's purposes. Failure to implement certain portions is like leaving a stave out of a barrel. What are the consequences of these voids for priorities and programs?

It would also be desirable to consider whether a mandated Assessment is the most effective means to assess progress, generate intellectual capital for revision, and focus attention on key issues.

Would a National Commission be more effective in generating options and gaining attention and support for improvement and refinement of the legislation? Or, in recognition of the data hiatus on program outcomes, would the resources utilized by the Assessment be more effectively invested in developing and maintaining a comprehensive national data base for vocational education through which the outcomes would be available to a wide variety of users to make essential judgments about the program's operations and future?

Mention was made in the introduction of the critical and almost inexcusable hiatus in the national data sets relating to the Assessment effort. For example, High School and Beyond (HSB) and the National Longitudinal Survey of Labor Market Experiences—Youth Cohort of the Department of Labor (NLS) data sets include students who left in 1982 or earlier (with minor exceptions). The National Educational Longitudinal Study (NELS) will not come on stream until 1988, with initial data collection on 8th graders. The last school year of data for the Vocational Education Data System (VEDS) was 1983. The new system, Data on Vocational Education (DOVE) will not be operational until 1988. In essence, even though there are cross-sectional data, there are no national data sets following students who were in school between 1983 and 1988. The gap is particularly vexing since it covers a time of major changes in all of American education and in particular secondary education, with important implications for vocational education. The appropriateness, utility, and availability of data from the Integrated Postsecondary Education Data System (IPEDS), the National Assessment of Educational Progress (NAEP), the Elementary/Secondary Integrated Data System (ESIDS) are yet unknown. This lapse in national longitudinal data embraces years when unprecedented changes and transformations have occurred in American education and is inexcusable. This default merits an explanation.

Is the five-year reauthorization cycle adequate time to implement an act, redirect vocational education, provide the improved program, and assess its consequences? Would longer authorization periods with mid-point hearings and technical amendments be more effective and realistic? Should the Carl Perkins Act become permanent legislation?

Have there been unintended or negative consequences growing out of the Act? How will these be addressed?

Recommendations for the Assessment Effort

The number of relevant questions and issues that could be generated from the construct and the congressional charge are almost infinite, and this tempts one to put forth endless recommendations. However, I have tried to resist this and offer only the eight major recommendations which follow:

(1) Utilize the model as a means of generating and sharpening some of the long-term issues undergirding the Assessment. Use the construct in planning, conducting, and reporting the effort. It frames the Assessment activities and would enable the report to relate to Congress and the public in terms that would be useful in the reauthorization.

(2) Without defaulting on the broad charge, priority should be given to studies and activities to:

   a. strengthen the enabling provisions;

   b. improve the performance of the vocational education enterprise for special populations;

   c. enhance state program improvement programs to assure greater impact; and

   d. note progress and further illustrate vocational education's role in advancing technology.

   These studies would focus on the narrowing federal agenda of at-risk populations and the growing edge of technology. Further, it should be noted that at-risk populations have been the most durable federal priority for vocational education.

(3) Address directly the two major strategic questions in the federal role:

a. broadening or narrowing the federal agenda; and

b. becoming more permissive and less directive or less permissive and more directive (totally or in part?—which parts?).

These questions are essential in considering how to optimize the federal role.

(4) Establish a five-seven member panel on methodology. The panel should meet several times to advise the Assessment staff on design options and on methodological issues of synthesis and summarization. Members should be neither a part of the advisory group nor contractors. The Assessment will likely commission or conduct some studies of its own as it moves toward meta-analysis or other appropriate summarization techniques to develop its recommendations. Use of the most appropriate, reliable, and valid means is essential if the report is to be broadly supportable in a variety of arenas. Because there is a constant discussion of appropriate methodology surrounding studies on key policy issues, particularly when the results don't please us, and since this Assessment will need to tap extant data bases, completed studies, and analyses of other data sets, such a group to aid the staff and consumers on the confidence limits of the data is essential.

(5) The work of this and earlier Assessments has been suboptimized by inadequate information systems. The Assessment should give priority to assuring that in-place data systems are available to guide future program operations and reviews. These systems should contain performance data as well as provide social bookkeeping.

(6) The problems and issues of secondary education are pervasive, compelling, and urgent. However, they are only part of the enterprise. Despite pressures to the contrary, the Assessment should increase the attention given to postsecondary and adult education. This should include information on postsecondary programs on the growing edge of technology, and on progress in developing institutionalized capacity to serve technologically and economically displaced industrial, agricultural, and government workers. Studies and needs in strengthening linkages to business, industry, labor, government, the military, and other employment and training systems should be included. Improved means of maximizing vocational education's contribution to basic and technological literacy for adults should also be investigated.

(7) There are other actors and forces influencing implementation beyond the vocational education enterprise—the Congress itself, ED, and others. Their roles and impact should be considered and factored in.

(8) Remember that Congress is the sponsor and needs the best data that can be assembled. Judgments on what the data reveal regarding the Perkins Act's adequacy, progress in implementing its provisions, and the consequences of implementation are also needed. Perhaps more importantly, Congress needs policy options for revising and strengthening the law.

Finally, in planning, conducting, and reporting the Assessment, it will be important to secure broad involvement and active participation by a number of public and private groups. Please remember, it is estimated that over 80 percent of the student clockhours in vocational education are delivered through general education institutions (high schools and community colleges) with general superintendents, presidents, and policy boards at both local and state levels. Additionally, there are literally thousands of professionals, employers, and others who serve on advisory groups at various levels. Their perspectives and support are needed to bring about the level of improvement envisioned for this Assessment.

Recommendations on Research Issues for The National Assessment of Vocational Education

Research Issue: Improving Access and Equity to Quality Vocational Education

Question 1: Do special populations (such as handicapped, disadvantaged, single parents or homemakers, criminal offenders, Native Americans, Hawaiian natives, limited English proficient, and adults in need of training and retraining assisted under the Act) have equal access to quality vocational education? What are the trends in enrollment patterns for these groups?

Studies needed:

a. Case studies and review of data in selected states for these special needs groups

b. Case studies of inner city and isolated rural areas to clarify the adequacy of resource allocations to special populations in these areas

c. A partition of the classroom dynamics data currently underway on schools in these areas

d. A comparison of the quality of vocational programs as a function of majority enrollment, e.g., women, Hispanics, Blacks

e. Data on characteristics of students currently enrolled in vocational education classes

f. A comparison of access of special populations by age group cohorts among/in NLS Youth

g. A comparison of the access of special populations by age group cohorts between NLS Youth and HSB respondents

Question 2: What are the comparative effects of vocational education for special populations such as women, single parents or homemakers, Hispanics, Blacks, Native Americans, the handicapped, and the lowest SES quartile in: wages and earnings, labor force participation, employment/unemployment, and postsecondary education?

Studies needed:

a. A study of the success of at-risk populations in securing training-related job placement, including investigation of what facilitative mechanisms are most effective in increasing placement

b. Followup studies of students from classrooms in the Classroom Dynamics Study with a second year cohort for comparison

Question 3: What is the effectiveness of vocational education programs and services for individuals of limited English proficiency?

Studies needed:

a. Case studies reflecting state policies, staffing, resource allocation, and representation in LEP programs

b. Case studies examining local programs, including policies, staffing, resource allocations, effectiveness measures, and outcomes

Research Issue: Improving Vocational Education's Contribution to the Economy

Question 1: What are the overall effects of vocational education on the following?

labor force participation
employment/unemployment
employment type
wages and earnings
job-related placement
productivity
employee satisfaction
employer satisfaction
earnings growth
employment in the private sector
self-employment

Studies needed:

- An update on the duration of the effects of vocational education

Research Issue: Excellence in Vocational Education

Question 1: What are the effects of vocational education in terms of the following?

- basic skills achievement
- information-seeking skills
- problem-solving skills and other higher order cognitive skills
- knowledge of the world of work and other employability skills
- occupational skills
- attendance, school retention (dropout prevention)
- satisfaction with education

How do effects vary by specialized populations and age groups?

Studies needed: Studies of test data of selected school systems on vocational education and academic skills (tests of information-seeking and problem-solving competencies are still primitive)

Research Issue: Capacity Building: Improving Access and Equity to Quality Vocational Education

Question 1: What are the status and effect of the coordination of vocational education and postsecondary programming for handicapped and disadvantaged individuals?

Studies needed:

Research Issue: Capacity Building: Improving Vocational Education's Contribution to Economic Development

Question 1: What has been the impact of the Perkins Act in modernizing the nation's vocational education system and expanding its capacity to meet the changing needs of the workplace?

- curricular changes
  - analysis of programs added/dropped
  - relationship to performance requirements of jobs
  - terminal performance objectives
  - student test scores

teacher updating
changes in certification requirements
equipment/facility improvements
improved articulation/coordination with business, industry, and labor
advisory committee and technical panel effectiveness

Studies needed:

Question 2: What has been the outcome of efforts by state programs of vocational education to coordinate with state economic development programs?

Studies needed:

Research Issues: Capacity Building: Excellence in Vocational Education

Question 1: What are the differential effects of vocational education provided by various institutions for differing populations and age groups?

all purpose high school
vocational high school
area school
community college
technical institute

Studies needed:

a. Investigation of the effects of vocational education provided through private trade and technical schools

b. A study of the progress made in delivering vocational education through community-based organizations

Question 2: What are the differential effects of vocational education provided by varying occupational areas for differing populations and age groups?

Studies needed:

Question 3: What advances have been made in managing and improving outcomes from state program improvement programs?

- Do problem areas support federal priorities (equity, economics, excellence)?
- Who are the target audiences?
    - high school students
    - teachers
    - administrators
    - adults
    - others
- Who are the recipients of awards?
    - local districts
    - universities
    - postsecondary institutions
    - private schools
    - others
- What is the focal area?
    - curriculum
    - evaluation
    - training
    - research
    - other
- What is the duration of funding?
- What are the outputs?
- What are the outcomes?
- How are the programs evaluated?
- How could this effort be improved?

Studies needed:

a. A case study of state program improvement programs

b. An outcomes assessment of selected investments by state program improvement programs

Question 4: What is the result of bilingual vocational training, including bilingual vocational instructor training, in addressing the unmet needs of individuals of limited English proficiency?

Studies needed: A case study of selected states' policies and investments in bilingual vocational instructor training.

Research Issue: Support Services: Equity

Question 1: What has been the impact of the sex equity set-asides on nontraditional enrollments, sex fair program offerings, and placement of completers?

Studies needed:

Research Issue: Support Services: Excellence in Vocational Education

Question 1: What are the skill and competency levels developed by the states (pursuant to Section 113(b)) under the State Plan?

Studies needed:

Research Issue: Enabling Provisions: Equity, Economics, Excellence

Question 1: Which enabling provisions on funding distribution have been most powerful in achieving which federal priorities?

matching
set-asides
minimum expenditures
criteria-formula
other

Studies needed:

Question 2: What is the impact of other provisions on goal attainment?

state plan: development and review process
required evaluations
regulation development process
timeliness
consequence with federal intent
advisory groups—federal, state, local

Studies needed:

__Question 3__: Can desirable program outcomes (defined by the federal priorities) be associated with alternate governance structures?

service to at-risk groups
distribution of programs across economic
    sectors and age groups
cost effectiveness
high placement

__Studies needed__:

__Question 4__: What evidence supports improved performance from the narrower focus of the current Act?

__Studies needed__:

__Question 5__: What is the extent, efficiency, and effectiveness of joint planning and coordination between vocational education and JTPA?

__Studies needed__

References

Bishop, J. N. (1986). Preparing youth for employment. Columbus: Ohio State University, National Center for Research in Vocational Education.

Budke, W. E., & Gordon, R. (in progress). Vocational education program improvement: An analysis of state administered projects in FY 1978-FY 1985. Columbus: Ohio State University, National Center for Research in Vocational Education.

Budke, W. E., & Harsch, W. J. (1986). Summary of state administered program improvement projects in FY 1985. Columbus: Ohio State University, National Center for Research in Vocational Education.

Campbell, P. B. (in progress). The effects of institutional characteristics on labor market and educational outcomes. Columbus: Ohio State University, National Center for Research in Vocational Education.

Campbell, P. B., Orth, M. N., & Seitz, P. (1981). Patterns of participation in secondary vocational education. Columbus: Ohio State University, National Center for Research in Vocational Education.

Campbell, P. B., Gardner, J. A., Seitz, P., Chukwuma, F. C., & Orth, M. N. (1981). Employment experiences of students with varying participation in secondary vocational education. Columbus: Ohio State University, National Center for Research in Vocational Education.

Campbell, P. B., & Basinger, K. (1985). Economic and noneconomic impacts on vocational education. Columbus: Ohio State University, National Center for Research in Vocational Education.

Campbell, P. B., Basinger, K. S., Dauner, M. B., & Parks, M. A. (1986). Outcomes of vocational education for women, minorities, the handicapped, and the poor. Columbus: Ohio State University, National Center for Research in Vocational Education.

Campbell, P. B., Mertens, D. M., Seitz, P., & Cox, S. (1982). Job satisfaction: Antecedents and associations. Columbus: Ohio State University, National Center for Research in Vocational Education.

Crowe, M. (1986). Analysis of students' basic skills performance in selected instructional delivery systems: Final report.

Columbus: Ohio State University, National Center for Research in Vocational Education.

Daymont, T. & Rumberger, R. W. (1982). The economic value of academic and vocational training acquired in high school. In Taylor, Rosen, & Pratzner (Eds.), Job training for youth: The contributions of the U.S. employability development system, (pp. 279-306). Columbus: Ohio State University, National Center for Research in Vocational Education.

Friedenberg, J. (in progress). The condition of vocational education for limited English proficient students in selected cities throughout the United States. Columbus: Ohio State University, National Center for Research in Vocational Education.

Gardner, J. A., Campbell, P. B., & Seitz, P. (1982). Influences of high school curriculum on determinants of labor market experiences. Columbus: Ohio State University, National Center for Research in Vocational Education.

Grasso, J. T., & Shea, J. R. (1979). Vocational education and training: Impact on youth. Berkeley, CA: The Carnegie Council on Policy Studies in Higher Education.

Hollenbeck, K. (in progress). Understanding the dynamics of postsecondary vocational education: A design study. Columbus: Ohio State University, National Center for Research in Vocational Education.

Hotchkiss, L., Kang, S., & Bishop, J. N. (1985). High school preparation for employment. Columbus: Ohio State University, National Center for Research in Vocational Education.

Hotchkiss, L., & Dorsten, L. E. (1985). Attitudes, behavior, and employability. Columbus: Ohio State University, National Center for Research in Vocational Education.

Hotchkiss, L. (1984). Effects of schooling on cognitive, attitudinal, and behavioral outcomes. Columbus: Ohio State University, National Center for Research in Vocational Education.

Lewis, M. (in progress). Vocational education and JTPA coordination study. Columbus: Ohio State University, National Center for Research in Vocational Education.

Littlefield, J. A. (in progress). Evaluation of vocational education programs for incarcerated adults in Ohio. Columbus: Ohio State University, National Center for Research in Vocational Education.

Loadman, W. E., & Rindered, R. E. (1986, April). A comparison of vocational, college preparatory, and general education students on common achievement indicators. Manuscript submitted for publication.

Long, J. P., Warmbrod, C. P., Faddis, C. R., & Lerner, M. J. (1986). Avenues for articulation: Coordinating secondary and postsecondary programs. (Research and Development Series No. 259). Columbus: Ohio State University, National Center for Research in Vocational Education.

Lotto, L. A. (1983). Building basic skills: Results from vocational education. (Research and Development Series No. 237). Columbus: Ohio State University, National Center for Research in Vocational Education.

Mertens, D. M., Gardner, J. A., & Seitz, P. (1982). Vocational education and the high school dropout. Columbus: Ohio State University, National Center for Research in Vocational Education.

Meyer, R. H. (1981). An economic analysis of high school vocational education: IV. The labor market effects of vocational education. Washington, DC: Urban Institute.

Oakes, J. (1983, May). Limiting opportunity: Student race and curricular differences in secondary vocational education. American Journal of Education, 91, 328-355.

Perlmutter, D. E. (1982). A followup study of students denied admission to vocational high schools. Albany: The University of the State of New York.

Reskin, B. F., & Hartmann, H. I. (Eds.). (1986). Women's work, men's work: Sex segregation on the job. Washington, DC: Commission on Behavioral and Social Sciences and Education of the National Research Council, National Academy Press.

Weber, J. M. (in progress). Understanding the dynamics of secondary vocational classrooms—a prerequisite to improvement. Columbus: Ohio State University, National Center for Research in Vocational Education.

Weber, J. M. (1986). The role of vocational education in decreasing the dropout rate. Columbus: Ohio State University, National Center for Research in Vocational Education.

II. ACCESS TO QUALITY VOCATIONAL EDUCATION

Access to Quality Vocational Education

Charles S. Benson

Access to Quality Vocational Education: A Sex Equity Perspective

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Chui Lim Tsang

ACCESS TO QUALITY VOCATIONAL EDUCATION

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Introduction

After making preliminary comments about "access to what" and "access for whom," I offer propositions and conjectures about vocational education and the services that vocational educators provide to special needs populations. These propositions and conjectures are drawn mainly from work that Gary Hoachlander and I did in the Project on National Vocational Education Resources (PONVER). That project, completed in 1981, was a part of Henry David's assessment of the 1976 Amendments (P.L.94-482). The propositions and conjectures are intended to be testable.

Following, I put down a definition of high quality vocational education programs. I am not so presumptuous as to suggest that this definition is fully worked out or in final form. What I intend to convey is the possibility that reasonable people could arrive at a definition to distinguish truly outstanding programs from those that are not. (Some modifications of a definition would surely be desirable, or at least tolerable, on a state-by-state basis.) Finally, I make some comments about access and the shape of the next federal vocational education act.

Access to What?

In decreasing order of difficulty to attain, one may postulate access to the following conditions or programs:

1. Employment in a job with a good future;
2. Completion of a good quality program of vocational education—or the attainment of a reasonable proxy for completion, such as enrollment in a higher level of education;
3. Full-time employment;
4. Enrollment in a good quality program of vocational education; and
5. Enrollment in any program of vocational education.

Obviously, I have not shown all possibilities of access, but these are some major ones. How far up the list should the federal government set its target? The ideal objective is employment in a job with a good future. However, this objective stands beyond the limits of vocational education policy. There is scant evidence that vocational education has an effect in reducing the national rate of unemployment—not in significant measure, anyway. Nor is there convincing evidence that vocational education draws jobs to those central cities that contain large numbers of low-income families. Thus, to meet target 1, vocational programs would have to instill in their low-income graduates a high propensity to be geographically mobile as well as the capacity to overcome statistical discrimination as it is applied in job markets to special needs populations. Some vocational programs are of this calibre but most are not. As a policy matter, target 1 is unrealistic for the next cycle of vocational education legislation; it would represent another case of the federal government's promising more than it can deliver.

Then, let's move down the list. Is target 5 good enough? I do not think so. As I shall argue below, participation in some vocational programs is a waste of time for students. Special needs populations appear to be especially vulnerable to this kind of federally approved disadvantagement. Hence, the matter of access should be elevated to a higher standard of attainment: target 4, participation in good quality programs, perhaps. Yet, in my own opinion, target 4 is still too modest. Unless consideration is given to completion rates and actions are taken to avoid high dropout and failure rates, we compound the problem of students' wasting valuable time by adding loss of self-confidence. In addition, I think we should all remind ourselves that against the option of vocational education stands the possibility of helping students become prepared to enter four-year college. Many majors in four-year colleges, possibly excepting the research universities, are eminently vocational. And there is the added value of the baccalaureate in the job market. Taking account of this option, settling for simple enrollment in a superior vocational program as the federal goal is, to use the old term, a cop-out. Accordingly, I would opt for target 2. If this looks more like "achievement" than "access," so be it.

Access for Whom?

Once again, in decreasing order of difficulty of providing access, here is a list of populations:

1. Children of international migrants;
2. Youth out of school and out of the labor market (this is the group that Rees describes as "the jobless," 1986);
3. Youth out of school and unemployed;
4. Youth out of school and employed;
5. Inmates and youth offenders;
6. Special needs adults;

7. Special needs youth in school and employed (unless training and work are jointly provided);

8. Special needs youth in school and unemployed;

9. Students without special needs; and

10. Adults without special needs.

The precise ordering in the list is not important, but it may be useful to note that people who need help are a diverse lot. This brings up the question of how much freight the relatively small amount of federal vocational dollars can carry. To say that federally aided programs should serve groups 1 through 8 may appear to be comprehensively humanitarian, but in actuality this approach may represent nothing but tokenism toward some of the hard-to-reach populations. Federally aided programs of vocational education are administered by state and local public servants who see their main clients to be people in groups 9 and 10. If programs populated predominantly by such folk could reach out and bring in hard-core dropouts and inmates, then the blessings of socially integrated occupational training would abound—but I do not think this will happen except possibly through radical change of a whole set of federal policies, in which vocational education legislation would be only one small component.

I would therefore suggest that the federal government direct its money toward groups 6 through 8 while reserving some funds for well-designed experimental programs for dropouts, prisoners, etc. These experimental programs might be put in the hands of nongovernmental agencies, about which we will say more later.

Some Possible Lessons from the Recent Past

In PONVER that Gary Hoachlander and I conducted for Henry David in the National Institute of Education's (NIE) assessment (1981), we developed some propositions that bear upon the problem of access. Because we had to spend a lot of time analyzing state plans and tracing flows of federal funds, we were not able to establish the validity of these propositions as thoroughly as we would have liked in every case. Further, even if the statements to follow were true in 1980-81, they may not remain true today. Nevertheless, if some or all of the propositions attract interest, they should be testable by a concentrated research effort in the time available for the present Assessment. Here they are.

Propositions Regarding Access

(1) There is a wide variation in the quality of vocational offerings, both between and within school districts and between and within postsecondary institutions. In this instance I do not mean anything esoteric regarding "quality." Low-grade programs provide little assistance to their graduates and school leavers in finding steady employment. The number of jobs, let us say, is few relative to the number of workers available (body and fender repair, general merchandising) in the specific geographic area, and the training program lacks sufficient esteem in the eyes of employers to bring the program's graduates to the top of the queue. The luckier graduates may indeed get work, but work in jobs where the pay is poor and advancement rather limited (child care, laundrying).

The equipment for instruction is simple, old, and often broken. Instructional supplies are scarce. Faculty morale is low. Faculty cannot indicate any significant involvement with potential employers of graduates. Rates of truancy and dropping out are high. Students appear to have difficulty in paying attention to the instructor and each other. In my view, the single most distressing characteristic of low-grade programs is the virtual absence of academic content anywhere in the program. Persons involved in this Assessment of vocational education would not want to have their children enrolled in such programs.

Good programs are likely to differ in all respects from the above description. However, a few more things should be noted. In good programs, faculty are completely up-to-date in the skills they teach, sufficiently so as to be able to project imminent changes in skill requirements. They try to inculcate in the students a similar desire to keep ahead of their fields. Two, faculty express a strong interest in the technicalities of the work processes they are training their students to master and show a kind of contagious enthusiasm for the work of their students. Three, and this point appears to have almost worldwide generalizability, both faculty and students have thorough, current knowledge of the nature of the workplaces in which the relevant skills will be practiced.

(2) Student places in programs at the high end of the quality range are held disproportionately by persons born into Anglo, middle class families. The white middle class is dominant in fields having anything to do with computers (computer-directed machine tools, computerized drafting, health services involving computers, the computerized office, printing), in fields having anything to do with electronics, in most programs having the word "technology" in their titles, and in most construction trades. Special needs populations are dominant in programs that have the word "general" in the title (general office, general merchandising), practical nursing, home-based activities (child care, nutrition, laundrying) and basic auto mechanics—also sometimes welding and masonry.

I have illustrated this point in terms of occupational destinations, but the differences in quality between programs attended by the white middle class and by special needs populations also extend into such matters as the skills of faculty, types of instructional equipment and supplies available, union sponsorship, and contact with employers and the workplace.

It is well known that some special needs families are very skeptical about the worth of vocational education; they regard assignment of their children to vocational programs as an invidious form of tracking. So it might be said that special needs students are not well represented in superior programs because of parental opposition. I suspect there is considerable validity to this point. Entrance to a majority of superior programs, I venture to say, is controlled by prerequisites, examination, or some other process of academic selection. Only clever youth are likely to gain entrance easily. Parents know which of their children are clever and they may be extremely reluctant to see their more gifted children trade a college preparatory program for vocational education, even for good vocational education. This view, however, does not address the finding of marked over-representation of special needs youth and adults in low quality programs. What it looks like is a process of double or two-stage tracking, with the second stage—assignment to or selection of low quality vocational education—being the truly harmful one.

(3) Enrollment in vocational education programs at the low end of the quality scale is a waste of time—not for every student but probably for a majority. The academic content is virtually nil. At the same time, the student gains little or nothing in the way of help in getting a job better than the worst jobs our society has to offer. In a 1985 study on vocational education in California, the data show that graduates of comprehensive high schools who had taken advanced, specialized vocational courses fared no better in the labor market than high school dropouts (Stern, Hoachlander, Choy, & Benson, 1985). I should be quick to point out that this result applies to graduates of vocational programs in comprehensive high schools, not to graduates of California's Regional Occupational Centers and Programs (ROC/ROP's), about which I shall have more to say later.

It is thus conceivable that the students in the vocational programs in the comprehensive high schools should have been taking "regular" courses, because these would have at least some instruction in academic skills. This line of argument appears to lead to the following conclusion: for special needs populations, the "hidden" problem of access is too much access to low quality programs and courses.

(4) Sex stereotyping in vocational education is extreme. This statement applies to both students and teachers. With regard to the equity objectives that Congress has developed over the last 20 years,

sex equity appears to be the hardest for vocational educators to deal with.

(5) Among the major institutional providers of vocational education, the comprehensive high schools offer a disproportionately large share of lower quality programs. Many high schools are relatively small; their vocational programs smaller yet. Thus, they suffer seriously from diseconomies of scale as affecting breadth and depth of programs. High schools lack the necessary flexibility in staffing to meet shifts in market demand for skills and to have a faculty that is truly up-to-date in skills content. Oftentimes their training equipment is sorely inadequate and obsolete. As Gilbert Sewall has noted, high school shops resemble industrial museums (Sewall, 1983). Were it otherwise, one might have little confidence that faculty would know how to use the equipment, much less keep it in repair. It is hard for high school teachers, lacking offices with telephones and transport allowances, to keep in close touch with employers.

In contrast, community colleges generally are larger, have more flexibility in staffing through use of part-time faculty, enjoy more adequate budgets for supplies and equipment, and, one way or another, find means for faculty and students to gain a sense of involvement with work processes in the employers' establishments. They also have the advantage of enrolling older students. Specialized high schools and regionally administered programs tend to have the same advantages as the community colleges except for the advantage of having older students.

The one possible exception to the inadequacy of the comprehensive high school in vocational education is training for occupations in agriculture. Here, apparently, a subtle blending of academic instruction and development of work skills is found, in correspondence with the ideal of the comprehensive model (Rosenfeld, 1985). In earlier times, one might have said the same about office skills and automobile mechanics. Today, the better jobs in both of these fields require experience in using computerized equipment, often of several different types. This requirement prices effective instruction out of the comprehensive high school market. Not only have instructional equipment costs shot up, but so have demands on the computational skills of instructors.

(6) Except for the matter of sex equity, the access problems in vocational education are located in major urban centers. (If true, this considerably narrows the geographic scope of federal concern about access.) On the one hand, the great concentrations of special needs populations are to be found in large central cities. On the other hand, I have heard little about denial of access in agricultural programs and not much more about access problems in suburban regions.

Testing the Propositions

Defining a manageable locus of the problem of access should be the first task. I therefore suggest that we begin with testing Proposition 6. One could establish a category of "joblessness." To be counted as jobless, a person would be (a) not in school and (b) either unemployed or out of the labor force. Current Population Reports of the Bureau of the Census should provide a basis of estimating a national total of jobless persons aged 16-24. One could then try to discover what proportions of jobless persons in the given age group reside in central cities. If that proportion turned out to be 75 percent or greater, I would hold that the remaining propositions be tested in central cities exclusively or as the main effort.

One would need to exert a certain amount of care in establishing central city areas for present purposes. Practically speaking, New York City is New York City and Chicago is Chicago. But in the case of Boston, one might wish to include contiguous industrial cities and towns. Oakland should be treated as a part of San Francisco, and Long Beach, Compton, etc., as a part of Los Angeles. On the other hand, using Standard Metropolitan Statistical Area's (SMSA) would not do, because one is seeking a clear separation of central cities from suburban areas.

Testing of propositions 1, 2, 3, and 5 would be enhanced if the study staff first came to an agreement on the essential elements of good quality programs. I offer my own list below, but that is only a start. Defining quality in vocational education calls for a certain amount of consultation. Full agreement is not possible. Knowledge is insufficient to establish a "perfect" definition. The staff should be prepared to make final decisions about a working definition. The working definition should be modified and refined in the process of testing the propositions—this is important.

The working definition should be logical, stringent, and not unwarrantedly controversial. By the latter phrase, I mean that if opposing views are strong on some element of the definition and information to settle the matter is meager, that element should be dropped. Once the staff has the essential elements in sight, there is the further matter of establishing the rules for quantification. If one says, for example, that good quality programs show the effects of close involvement with the workplace, how much involvement is "close?" Preliminary site visits to some widely different kinds of programs might be a help in setting the rules for quantification.

If all goes well, at this stage of the investigation we have a geographic locus for study and a working definition of good quality in vocational programs. I would then say that propositions 1, 2, 3, and 5 should be tested by survey research. (If the results are packaged as case studies, that would be fine, but I regard that as a side issue.) Some things can be learned by mail questionnaires and telephone surveys, but there is no substitute for site visits. The site visits should be planned to afford semi-structured interviews with faculty, administrators, students, graduates, and employers. Along this line, the World Bank has completed what I regard as an exemplary study of vocational education based on in-depth interviews with graduates and employers, combined with first-hand observation of training programs (Regional Review, 1986).

Proposition 2 refers to the distribution of students in high and low quality programs by ethnic and socioeconomic status (SES) characteristics. High School and Beyond (HSB) could be used to supplement survey research on this matter, at least to the extent of identifying the characteristics of students who are in introductory versus advanced programs. At the postsecondary level, HSB might be used to see how ethnic and SES groups differ in persistence toward completion of programs. Are, for example, minority and low SES students more prone to milling around among programs and to dropping out than are other students?

Last, I come to proposition 4, sex equity. This proposition should be relatively easy to test simply by showing the proportion of females in different programs by six-digit code. For this proposition, it might be desirable to expand the geographic locus beyond central cities to include a sample of suburban and rural areas.

Let us now turn back to proposition 2, that student places in superior programs are held by the white middle class, with relatively few representatives of special needs populations. Why should this be so? To ask this question brings us to a central point of policy prescription. If denial of access to good quality programs is observable, the government presumably wants to do something to reduce the extent of denial. But in order to do something effective, government needs to know the conditions under which denial is established. Otherwise, it might attack irrelevant conditions while overlooking those that really matter. I now offer the conjectures that we developed in PONVER. I believe these, like the propositions listed above, are researchable within the time frame of the current Assessment.

Conjectures on Why Access is Denied

(1) In at least two ways, location of the instructional facility can be a cause of denial of access. First, if the school or college is very far in travel time from the students' homes, they may not have enough hours in the day to avail themselves of the training, or the cost of transport may be prohibitive. In some cases, lack of a cheap, efficient system of public transport is the root of the problem, but there are other cases where the distances simply are too great to be dealt with by any means. Second, in other instances, a desired program of instruction lies on the other side of a district line under the condition that no interdistrict student transfers are

allowed. Vocational educators might deny that location of facilities serves to deny access, because vocational courses are so widely distributed among high schools. This claim requires justification that courses offered in comprehensive high schools display the breadth and depth necessary to meet students' objectives in occupational training. Because of the diseconomy of scale problem cited earlier, this justification fails in most instances.

(2) Attitudes of parents, students, and educators may block access to certain vocational programs. (I assume that "blocking" of access is to be considered along with denial more strictly defined.) Already noted is the case where parents of special needs children maintain that any form of vocational education is second rate and to be avoided by their children. A second situation applies to young women and young men who wish to receive training in an occupation not traditional for their sex. Both parents and educators have been known to block the exercise of such preferences.

(3) Lack of appropriate and timely information in the hands of students may represent a denial of access. Superior programs are likely to be oversubscribed. Being oversubscribed, the faculty and administrators feel little pressure to advertise and seek out a new type of clientele. If the courses are filled on a first-come, first-served basis, only the students who receive early notice of the time and place of registration have a good chance of getting in. If the word is passed to students in some schools and classrooms but not in others, this is denial of access. On the other hand, if the courses are filled on the basis of an interview with the instructor, some students may not be aware of how to present themselves favorably.

(4) Especially in apprenticeship programs, trade unions exert considerable influence on admissions, sometimes to the extent of requiring union membership. The willingness of a local to accept certain students as apprentices may not be random, on the one hand, nor completely meritocratic on the other.

(5) High school students may not have sufficient time in the school day to take a vocational program. This is an especially notable problem for less capable students. The problem has become more serious as a result of: (a) a raising of standards for high school graduation under the educational reform movement and (b) the general unwillingness of school officials to accept vocational courses as meeting subject-specific requirements for high school graduation, even when they have demonstrable academic content. Moreover, the educational reform movement is coincident in time with severe budgetary constraints in a number of states. An early casualty of budget cutbacks is summer schools. Students in the past took vocational courses in the regular academic year and made up for any academic courses they missed in the summer program. In many schools, this is no longer possible. The students who are most affected by these situations are special needs persons.

(6) The most widely pervasive reason for the underrepresentation of special needs students in high quality vocational education is, in my opinion, the fact that many (probably most) of the superior programs have admissions standards, expressed either as course prerequisites (possibly including passing a certain course with a certain grade or better) or as an entrance examination. Under certain conditions, admissions standards represent a denial of access. I would list these conditions as follows: (a) course prerequisites can be shown to be irrelevant to success in the program or excessive or repetitious; (b) entrance examinations can be shown to be poor predictors of program success; and (c) the existence of admissions standards is used to intimidate applicants and discourage certain types of students from becoming applicants.

The exercise of admissions standards appears to be an ad hoc process—program by program, school by school. It seems to be largely unmonitored. A pernicious way of handling admissions is to make a ranking of students on the basis of grades in previous courses, scores on an admissions examination, etc., and fill up the program from the top of the list down. A fairer way is to establish a basic minimum standard of qualification for entry and then to choose randomly among the pool of qualified applicants. Rankings above a basic standard of qualification are so unreliable as to stand as an instance of denial of access.

Testing the Conjectures

Conjecture 1 could be tested by examining patterns of residence of special needs populations relative to location of vocational programs, distinguished by type and quality, in certain districts. Travel time and travel cost between residence and training sites should be recorded. I suggest Dade County, Los Angeles, and Kansas City, Missouri, as interesting districts to study. Conjectures 2, 3, 4 and 5 could be tested by the methods of survey research, combining mail questionnaires, telephone surveys, and site visits. Testing conjecture 2 requires one to make an attempt to obtain attitudes and opinions of parents. Conjectures 3 and 5 should be tested primarily through making contact with students. Conjecture 4 should be examined on the basis of interviews with union leaders and students.

Testing of conjecture 6 is somewhat more complicated. From interviews with teachers and students, one would seek to determine the forms of admissions standards, whether those forms are subject to change from one period of time to the next, whether the admissions standards had been validated as predictors of program completion or success, whether students denied admission were offered means to improve their chances in the event of re-application, whether there was an appeals process for students denied admission, and whether, in general, the admissions process appeared to be free of arbitrary, capricious, or intimidating elements.

Attributes of Good Quality Programs

If one is concerned about denial of access of special needs populations to vocational programs of good quality, then one must be prepared to describe the attributes of those quality programs. To try to move the discussion along, here is my attempt to do that.

Good quality programs will have the following characteristics, inter alia:

(1) At the secondary and adult levels, students must have at least two contact hours a day in the programs and the programs must cover two full academic years of study.

(2) At the postsecondary level, students must have at least two contact hours per day and the program must cover at least one full academic year.

(3) The programs must be able to demonstrate involvement with employers, meaning that employers make contributions in cash or kind to the programs; involvement must go beyond the establishment of an advisory committee; cooperative programs are examples of this degree of involvement.

(4) The programs must have general prerequisites of eighth grade level English and mathematics.

(5) The programs must be aimed at preparing students for well-paying jobs in the primary labor market or must have a proven record of assisting youth who are predictably prone to full-time or partial unemployment to obtain full-time, steady work. In other words, the programs have a high "value added" component of job prospect improvement.

(6) At the same time, the programs must be flexible enough to respond quickly to shifts in demand in local labor markets.

(7) In at least one-half of the courses in the program, there must be a substantial amount of academic content.

(8) The faculty must be experienced and up-to-date in the skills they teach and in close and frequent touch with employers.

(9) The equipment used must be well maintained and of a type currently in use in progressive firms.

(10) Absentee rates of students and dropout rates must be low.

(11) The conclusion of the programs must be marked by a comprehensive examination in skills and by a completion ceremony, corresponding to practices in the better-run apprenticeship programs.

Heating the Ocean and Silver Bullets

To summarize the problems: we have a combination of (1) an excessive degree of access of special needs populations (access encouraged) to low-grade vocational programs offering few benefits and possibly doing harm to students and (2) too limited access of special needs populations (access denied) to high-grade programs. I suggest that these two problems need to be approached in different manners. For access encouraged, I propose "heating the ocean." For access denied, there are "silver bullets."

Heating (Boiling) the Ocean

If vocational programs at the low end of the quality scale could be notably improved or, in some cases, phased out, the primary beneficiaries would be the special needs populations, for the simple reason that special needs students are so grossly over-represented in those offerings. However, I do not see that federal legislation has a role to play in this assignment. If federal funds were effectively denied to these programs, they would still roll merrily along, subsisting on state and local money. Faculty, in most cases, are tenured and difficult to reassign. Few resources other than faculty and student time are consumed by the programs. Thus, financial incentives are ineffective. Under our decentralized system of educational management, the federal government certainly lacks the direct power to improve them or disband them by fiat. Nevertheless, there are some things the federal government could do—things standing outside the legislative arena.

The educational reform movement has demonstrated that the U.S. Department of Education can indeed be used as a bully pulpit. The same approach is available to upgrade vocational education. Through commission reports laced with an appropriate amount of purple prose, the Department could lead the states to re-examine and improve their standards in the vocational field. The reports should show how far behind Japan, Germany, et al. we are in entry level skills acquired in schools or in combination school-work training programs. The reports might lay particular stress on the need for better preservice training of vocational teachers and should come down especially hard on the importance of faculty retraining. A national policy statement could include some observations on the need for equipment and instructional supplies, factors that are especially important in vocational, as compared with academic, education. The Department should argue forcefully that high school students should receive academic credit toward the award of the high school diploma for vocational courses in which there is substantial academic content. It should stress the importance of summer schools for vocational students, for without summer schools, students lack the time both to meet the new academic requirements of the high school diploma and to take a full range of vocational subjects.

It would also be a good thing for the Department to organize some well-publicized regional conferences to present information about superior programs, "vocational education that works for all of us." Some might argue that it will be hard to duplicate the success of the academic excellence movement that has direct appeal to a vocal segment of the middle class, whereas vocational education serves students whose parents lack political clout in state legislatures. True, but as a substitute, there may be political mileage in the "need for skills to keep our industry strong—and our trade deficit down!"

Silver Bullets

To correct the other problem—lack of access of special needs populations to high quality vocational programs—I suggest that federal legislation aim a set of silver bullets. Even under the Perkins Act, the federal government is still trying to do too much with too little. The new act should be narrow, slim, and highly focused. In my testimony to the House Committee on Education and Labor on H.R. 4164, November 3, 1983, I proposed that federal funds be spent exclusively in three simple ways: (1) per student grants to high quality "advanced" programs; (2) additional and extra per student grants to high quality programs that enroll members of special needs populations; and (3) in lesser amounts, construction money for situations where the lack of a physical facility is the inhibiting factor in access of the underserved to good vocational programs. Item (2) included a bonus for program completers. The federal interest would be confined to quality of program and to access for the underserved. Aside from auditing and a necessary minimum monitoring of program quality, the legislation would be practically free of administrative action at the federal and state levels.

There were, in my opinion, two especially important features of the proposal. First, the federal money would go directly to the director(s) of the quality program(s)—not to the school district, not to the chief executive officer of the community college, but to the program director. Second, the federal money would be available to be spent by the director on any legitimate and legal item in the budget of the quality program. That is, the director should not put the money in his pocket and he should confine the expenditure to the particular program that earned it—but otherwise, it would be the director's choice (though good directors would certainly consult with faculty and clients about appropriate uses).

The intent of these two latter provisions is to establish strong incentives for directors and faculty to: (a) upgrade programs to quality status; (b) maintain the status of quality programs, and, if possible, to improve them; (c) search out promising students to enroll from underserved populations; and (d) try to make sure that students from special needs populations complete the programs. Confining federal money in this way to quality programs would allow the grants per student to be substantial—and the special needs students could earn rather extraordinary amounts for programs in which they are enrolled.

Modesty forbids, but I still think this is the way to go. In looking recently at the ROC/ROPs, I became even more convinced that a certain degree of "public entrepreneurship" is a key element in vocational education. In California, the ROC/ROPs provide part-day instruction to secondary students; they also offer programs for adults. It seems to be a matter of general agreement that, on the average, ROC/ROPs offer better programs of vocational education than do the comprehensive high schools. ROC/ROPs do not show the range and depth of programs of community colleges, especially in technological fields, but their standard is good and oftentimes a ROC/ROP will have one, two, or three specialized programs that are outstanding.

ROC/ROPs are funded by the State of California on the basis of student attendance. This is virtually their sole source of public support. Whereas some directors of ROC/ROPs might like to see their institutions grow larger, none would like to see his/her institution fall into a state of decline. How can the institutions be protected? Faculty and administrators are aware that no student is obliged to attend a ROC/ROP, and for some students, such attendance requires extra effort, time, or deprivation such as giving up sports in the home high school.

It is thus incumbent on the directors of ROC/ROPs to keep in good standing with present and prospective students. Otherwise attendance will decline and the ROC/ROP's budget will shrink, meaning that faculty will have to be laid off, morale will suffer, etc. The chief service that the directors of ROC/ROPs and their faculties have to offer students is training that leads to jobs. Even college preparatory students enroll in order to get good part-time jobs while they are in college. It is important for the ROC/ROPs to give evidence either before enrollment or during instruction that graduates really do get work in the occupations for which the training is given; otherwise, the enrollment will drift away.

Hence, the directors and faculty have reason to be active in placement. They need to maintain instruction at a high enough level to satisfy employers. In short, directors and faculty of ROC/ROPs must be sufficiently entrepreneurial to meet two market tests: (1) selling themselves to students by promising the students better jobs than they could otherwise have and (2) selling their students to employers (otherwise market test 1 can't be fulfilled).

There are other entrepreneurial aspects to ROC/ROPs. No faculty have tenure and considerable use is made of short-term, part-time staff. Directors and faculty try to cadge instructional equipment from employers and also seek the free secondment of highly skilled workers of local employers to teach part-time in the institution. But aside from these features, the entrepreneurial energy that flows from getting significant amounts of money directly and unrestrictedly from per-student grants could be attached to quality programs more generally if the federal vocational funds were to be distributed as described above. Access could be strengthened if special needs students brought in extra stipends. However, that extra benefit simply adds on to a recruitment search that already exists. The California ROC/ROPs receive virtually no federal funds and are somewhat free of the social imperatives of the federal legislation. Nevertheless, their proportions of special needs students are about equal to those in comprehensive high schools where the federal strictures apply in full force.

And Some Tiny Silver Bullets

There are a few additional matters I would like to see included in new federal legislation:

(1) Funds for a major study of admissions standards in superior vocational programs. The study should seek to determine if the standards are appropriate (i.e., not excessive), relevant, and predictive of program success. The study should also try to determine if there are superior programs (meaning, inter alia, that the programs send students out to good jobs) that do not have admissions standards. If such programs exist, they should become targets for affirmative action enrollment policies.

(2) Funds for contracts with the administrations of big city school districts to set up exemplary programs in technological fields in areas convenient to low-income populations. Parts of these facilities should serve exploratory, recreational, and interest-stimulating objectives. In my opinion, these grants should be administered by agencies such as the major foundations, the National Academy of Sciences, etc. Special attention should be given to drawing in dropouts.

(3) Funds, similarly administered, for contracts with large private firms to establish training programs in

central cities, such programs to be jointly run by the technical staff of the firms and the local school district.

Along with the heating the ocean policy, these are the silver bullets I suggest. The two policies together might have some effect on the twin difficulties in access to vocational education: access encouraged to inferior programs and access denied to superior training.

Problems of Implementation

Let us now consider three problems of implementation, or, better, three possible problems. First, there is a question of whether federal grants given directly to high quality programs will actually improve opportunities for members of special needs populations. Might not the funds be absorbed by programs serving white, middle class students, making them stronger but not making them more accessible to low-income minority students and to handicapped persons? This is a danger, but I do not think it is a very big danger, and for two reasons:

(1) Some opinions to the contrary, there are significant numbers of superior programs in central cities. They are inadequate in total size to serve the resident populations adequately, but they should not be overlooked. Oftentimes they exist side-by-side with inferior programs in the same institution. These superior programs that serve mainly a special needs clientele need to be recognized and they need to be better financed. In some cases they can be expanded to cater to a larger enrollment. Some central city programs that are near to meeting quality criteria might find the prospect of federal grants sufficient incentive to upgrade themselves.

(2) The proposal about federal grants that I have made offers extra money to faculty and administrators in superior programs who serve special needs populations. Such an incentive does not presently exist, and given the amount of money potentially available, it could be quite powerful. In any case, it is a different kind of inducement than that which is embodied in the Carl Perkins Act. That Act requires that a large share of available federal funds be spent in programs enrolling special needs students, but it does not specify that these students should be enrolled in programs of high quality.

Second, there is a need to develop appropriate standards for the high quality vocational offerings. In my opinion, these should be prepared in the states under guidelines established by the federal government and should be subject to federal review. Periodically, the standards should be re-examined and, if necessary, revised. The standards should apply to the universe of programs, not to some subset of programs designed exclusively to serve special needs students.

Third, there is the problem of how to assure that grants distributed directly to program administrators could be contained for purposes of vocational education. To protect vocational funds for vocational programs is one of the oldest problems in the field. That grants can be made directly to administrators of school programs seems to be reasonably well established, but difficulties would arise if grant funds were to be used to pay or supplement teachers' salaries. If a proper objective of vocational education reform is to meld academic instruction and skills training, then academic teachers are likely to instruct classes that enroll students from the high quality vocational programs and from the college preparatory program. Likewise, vocational teachers may serve the two sets of students simultaneously. One might hope that the two sets of students would become virtually indistinguishable. It could get very messy to try to prorate a share of teaching time onto federal vocational grants in such situations. This suggests that the federal grants might be restricted to supplies and equipment, professional development of vocational faculty, the excess costs of running cooperative programs, office space for vocational faculty, telephone budgets, travel allowances for vocational faculty, and other similar outlays.

Sex Equity and Access

As I indicated above, access of young women and men to training in fields not traditional for their sex appears to be perhaps the thorniest of the access problems. There is plainly a need to pass a threshold of training and employment in nontraditional fields for any effort in this direction to become self-sustaining. Nevertheless, I do not see the problem as hopeless, and I have three suggestions to consider in studying how to alleviate it. (1) It would be highly appropriate, in my opinion, for the National Assessment staff to conduct a systematic poll of the sex equity coordinators in the 50 states. These offices were created in the 1976 legislation and by now they should represent a mine of information on successful practices in sex equity. (2) The military has had considerable experience in the sex equity field; some of that experience has been analyzed, e.g., Waite and Berryman, 1985. This is another important source of leads to what works. (3) It would be a good idea, I would hold, to solicit information from persons who have successfully entered nontraditional lines of work. The objectives would be to try to identify the characteristics of persons who find such experiences rewarding, in order better to know how to target recruitment efforts and, secondly, to try to discover what particular aspects or components of training stimulated or inhibited their interest in pursuing a nontraditional career.

A Concluding Note

Vocational education does not have the resources to do what people should rightly expect of vocational educators. One of the most pressing central issues in the country is labor productivity and how to increase it. That concern will almost surely grow. Work skills are an important element in labor productivity. Yet, even in postsecondary institutions, too often one sees that the commitment of students to vocational programs is casual and desultory and that the programs lack structure and rigor. The safest predictions about skills requirements for higher productivity are these: (1) workers must be efficient in learning on the job, i.e., skills taught in educational institutions will not be sufficient to maintain employment over a working career unless those skills include the capacity to learn new skills; and (2) the individual worker will be expected to play a bigger role in solving production problems. In short, teaching how to do something over and over, even if that something is complicated and manually difficult, will not be enough to improve productivity. Teaching future workers how to think more clearly and learn more easily—and how to become prepared to solve production problems on one's own—is a challenge. The challenge is heightened for vocational educators whenever they enroll students whose preparation through the elementary and middle grades has not been the best. Resolve is strengthened, however, by the recognition that these challenges are being met right now in our better programs of vocational education.

References

Rees, A. (1986). Journal of Economic Literature.

Rosenfeld, S. (1985). The high school in a rural economy. Foresight.

Sewall, G. (1983, September 19). Vocational education that works. Fortune, p. 70.

Stern, D., Hoachlander, E. G., Choy, S., & Benson, C. (1985). One million hours a day. Policy Analysis for California Education (PACE). Berkeley, CA: University of California.

Waite, L. J., & Berryman, S. B. (1985). Women in nontraditional occupations: Choice and turnover. Santa Monica, CA: Rand Corporation.

World Bank. (1986, July). Regional review of alternative modes of vocational training and technical education: Final report.

ACCESS TO QUALITY VOCATIONAL EDUCATION: A SEX EQUITY PERSPECTIVE

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Like its predecessor, the 1976 Amendments to the Vocational Education Act of 1963 (P.L. 94-482), one intent of the Perkins Act (P.L. 98-524) is to increase sex equity in vocational education. How much progress is being made toward this aim? This paper assesses the accomplishments of the vocational education enterprise over the past decade in reducing sex stereotyping and improving girls' and women's access to high-quality vocational education. It argues that the serious remaining obstacles to sex equity are related to major trends in the economy and society as well as to issues in the education system and concludes with a discussion of some unresolved issues and recommendations for future research.

The 1976 Amendments and Their Results

The goal of achieving sex equity in vocational education first came to the forefront of federal legislation with the 1976 Amendments. Title I of the Amendments states that among the objectives of federal vocational education assistance to the States is the intention to help them:

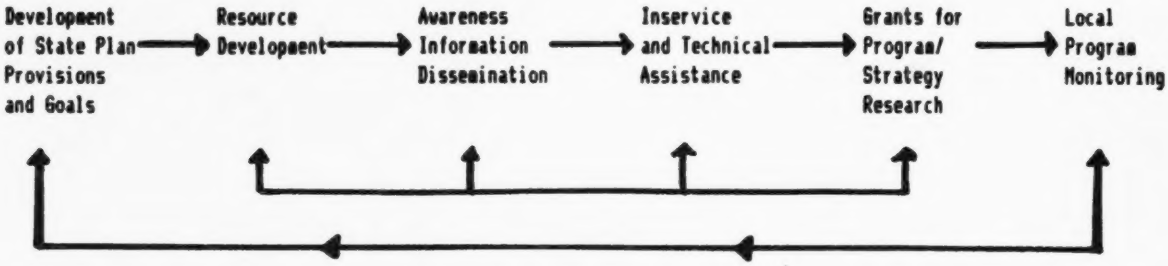
> to develop and carry out such programs of vocational education within each State so as to overcome sex discrimination and sex stereotyping in vocational education programs (including programs of homemaking), and thereby furnish equal educational opportunities in vocational education to persons of both sexes,...

Language promoting sex equity was pervasive throughout the 1976 Amendments, but only two provisions were mandatory: (1) commitment of at least $50,000 of a state's basic grant to support full-time personnel who would assist the State Board in assuring equal opportunity to both sexes and (2) commitment of some part of states' Subpart 2 funds to serve the vocational needs of special groups such as displaced homemakers and single heads of households.

The legislation specifically outlined the functions of the proposed position of Sex Equity Coordinator in state education agencies (SEAs), assigning multiple responsibilities but minimal implementation authority. A 1979 evaluation of sex equity accomplishments in vocational education found that 47 states had appointed permanent Sex Equity Coordinators, at least half of whom had been on the job for less than one year. Of the 47 coordinators, 37 had been given a budget to administer and reported that the largest proportion of their time (25 percent) was spent in activities designed to raise awareness of sex equity issues (AIR, 1979). In the years following the Amendments, most states engaged in the continuum of activities represented in Figure 1 below.

Figure 1

Sex Equity Continuum of Activities
Under P.L. 94-482


Development of State Plan Provisions and Goals
Resource Development
Awareness Information Dissemination
Inservice and Technical Assistance
Grants for Program/ Strategy Research
Local Program Monitoring

Accomplishments of the 1976 Amendments

Evidence collected in preparation for the 1982 reauthorization of the Vocational Education Act attested to the variety and scope of state and local activities to reduce sex bias and sex stereotyping. States had made initial efforts to pry open access to vocational programs, creating vocational and training opportunities for girls and women generally and specifically targeting the special needs female groups. Principal state activities during the 1976-82 period included:

(1) Creating awareness of sex-based inequalities in vocational program enrollments through inservice training aimed primarily at administrators and counselors;

(2) Providing technical assistance, often from field-based consultants who offered workshops and presentations to local schools on such topics as how to eliminate sex bias in materials or instruction;

(3) Monitoring local programs and activities as part of civil rights monitoring or program evaluations;

(4) Reviewing state grants to ensure that the needs of women were being met;

(5) Research and development of curriculum materials, recruitment models, and other resources;

(6) Creation of some Displaced Homemaker Centers that delivered or coordinated services such as counseling, advising, assessment, and training for this out-of-school group.

Most sex equity programs and activities focused on local educational agencies; other targets included institutions of higher education, employers, and community agencies.

Numerous examples of the results of early sex equity activities can be cited. Research and development yielded exemplary program models for recruitment, assessment, training, and placement of both in-school females and displaced homemakers. The U.S. Department of Education's Secretary's Award for Recognition of Outstanding Vocational Programs honored several of these programs. Quality products were also recognized in the exemplary materials evaluations of the National Center for Research in Vocational Education (NCRVE). Dissemination results were mixed. There was extensive sharing of exemplary programs and products in sex equity among the states through the efforts of NCRVE, the National Network for Curriculum Coordination in Vocational Technical Education (NNCCVTE), and state sex equity coordinators. Impact data from the NNCCVTE indicated many state-level adoptions of sex equity materials. However, several evaluation reports noted that dissemination efforts from the state to the local level were limited (TERC, 1981; NACVE, 1980; AIR, 1979).

Outcome Measures

Policymakers and vocational educators alike would probably agree that the early efforts to eliminate sex bias and stereotyping in vocational education programs had done an excellent job of raising general awareness of the problem. Furthermore, female enrollments in vocational education had increased, thus meeting part of the intent of the law—encouraging females to take advantage of the vocational education system. However, if the criterion for success was higher enrollments in programs leading to nontraditional occupations, much work remained.

Data showing the lack of progress in this area came from state enrollment statistics (e.g., Lary & Landay, 1985), longitudinal studies, State Advisory Council evaluations, and the vocational education study of the National Institute of Education (NIE). The final report of the NIE study found that "sex stereotyping is still a widespread problem in vocational education" but was somewhat encouraged by the progress made in a four-year period.

A report done for the National Advisory Council on Vocational Education (NACVE) and the National Advisory Council on Women's Educational Programs (NACWEP) indicated a rapid expansion of female enrollment in vocational education between 1972 and 1978. Although the overall proportion of women enrolled in nontraditional programs doubled between 1972 and 1978, they still represented only about one-tenth of total enrollments (see Figure 2). Young women were enrolling in droves in programs leading to the traditional careers in business, home economics, and health fields, but they were still tending to ignore the potential for higher pay available in nontraditional jobs.

Figure 2

Women Enrolled in Nontraditional Employment Categories
by Occupational Training Area and Year

	1972	1976	1978 (percent)
Nontraditional: Total	5.4	8.8	11.1
Trades and Industry	5.4	7.8	9.5
Agriculture	3.9	9.6	13.1
Distributive Education	14.6	23.4	16.1
Technical	8.6	12.2	16.7

Source: Based on data from U.S. Department of Health, Education, and Welfare, Bureau of Occupational and Adult Education.

Other NACVE findings shed light on one explanation for the lack of nontraditional enrollments. They revealed a correlation between the amount of planning and follow-through of state enrollment goals and success in nontraditional enrollments. In particular, state monitoring appeared to have the highest correlation with local activity level, which in turn correlated with higher nontraditional enrollments. However, states had engaged in relatively little monitoring and evaluation by 1980, a fact that affected the types of baseline data available at the time of the last reauthorization (NACVE, 1980).

Other important issues emerged from research on the impact of sex equity provisions in vocational education. For example:

- State and local efforts had not effectively targeted peers and parents, demonstrably the strongest influences on students' choice of vocational programs (Michigan, 1985).

- At the local school level, the attitudes of students and school personnel had changed very little (Campbell-Thrane, 1981).

- o Few states, LEAs, or schools were engaged in community and employer liaison activities, despite the fact that such linkages appeared to be critical to making progress in sex equity initiatives (AIR, 1979).

Summary

While the 1976 Amendments stimulated much activity in the field and successfully underwrote the development of exemplary models and materials, as of 1983 the achievement of broader goals remained elusive. Female enrollments in nontraditional fields continued to lag. Student attitudes had not changed much, probably reflecting the sex stereotyping that persisted among school personnel, peers, and parents. Research and evaluation at the state level had failed to track progress in a way that would build a foundation for future efforts.

It is not clear what proportion of the increase in general vocational enrollments by females in the late 1970s is directly attributable to the 1976 Vocational Education Amendments. The implementation of Title IX, the Women's Educational Equity Act Program (WEEA), and a generally more favorable economic and social climate for working women also contributed to the increased enrollments in traditional fields. The mixed record of the 1976 Amendments suggests a need to reassess the strategies brought to bear on improving sex equity in vocational education. Moreover, broader trends in society and the economy make an equally compelling argument that more carefully planned approaches to the problem are needed. We now turn to an analysis of how these trends impede progress in sex equity in the workplace.

Current Economic and Social Trends Impeding Sex Equity

As we have moved through the 1980s, issues related to women and work have continued to grow. They have expanded beyond in-school youth and the displaced homemaker to encompass teenage parenthood, single parents, and the changing family structure. Increasingly, they must be viewed as structural economic and social issues rather than issues of humanitarianism or civil rights.

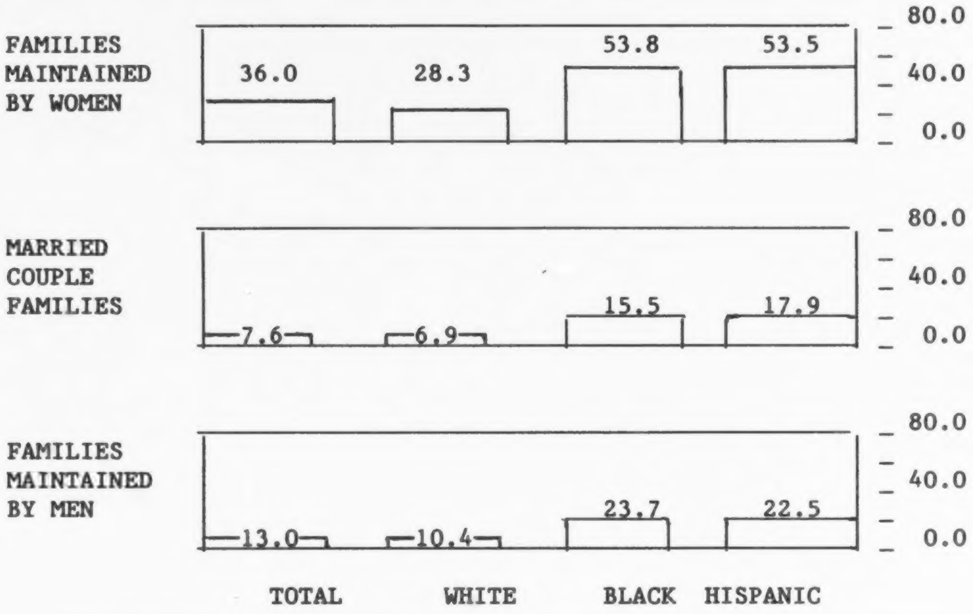
The 1980 census revealed several important developments related to women in the work force (U.S. Department of Labor, 1985). Households with only male wage earners were in the minority; women were 54 percent of the labor force and the most dramatic growth was in the 25-54-year-old age group, a cohort often in need of retraining.

Economically, women remain in the lower strata of earnings. Families maintained by women—a growing segment of the population—

have a poverty rate nearly three times that of families maintained by men and five times that of families that include married couples (see Figure 3). Although the reasons for the economic statistics are complex, one factor stands out: women earn less than men.

Figure 3

Families Living in Poverty, 1983



Source: Bureau of the Census, U.S. Department of Commerce.

Currently, the comparison ratio is 64 cents on the dollar—up from 59 cents ten years ago (see Figure 4).

The U.S. Commission on Civil Rights stated in 1985 that discrimination by employers was not a major cause of the wage gap between women and men. Instead, the Commission found that the key issues were the socialization of women, women's dual role of homemaker and wage earner (which often forces them to refuse overtime work), and their intermittency in the labor force. The Commission also identified the education system as a factor contributing to women's lower economic standing, saying that if "discrimination in education has affected job choices of women, the remedy doesn't lie in penalizing employers. . . but in eliminating discrimination in education" (U.S. Commission on Civil Rights, 1985).

In fact, Department of Labor data indicate that the educational gap between males and females is dwindling. A higher percentage of females complete high school (86 percent compared with 82 percent for males). Entrance and retention rates for women at the college level have grown over the past decade. According to the recently released

Figure 4

Comparison of Median Earnings of Year-round Full-time Workers, 1975-1983[1]

Year	Median Earnings Women	 Men	Earnings Gap in Current Dollars	Women's Earnings as a Percent of Men's	Percent Men's Earnings Exceeded Women's	Earnings Gap in Constant 1967 Dollars
1983	$13,915	$21,881	$7,966	63.6	57.2	$2,670
1982	13,014	21,077	8,063	61.7	62.0	2,789
1981	12,001	20,260	8,259	59.2	68.8	3,032
1980	11,197	18,612	7,415	60.2	66.2	3,004
1979	10,151	17,014	6,863	59.7	67.6	3,157
1978	9,350	15,730	6,380	59.4	68.2	3,267
1977	8,618	14,626	6,008	58.9	69.7	3,310
1976	8,099	13,455	5,356	60.2	66.1	3,141
1975	7,504	12,758	5,254	58.8	70.0	3,259

Source: U.S. Department of Commerce, Bureau of the Census.

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[1] Data are for persons 15 years and over beginning with 1979. Prior to 1979, data are for persons 14 and over. Data reflect wage and salary income and earnings from self-employment.

report "The American Freshman: 20 Year Trends, 1966-1985," women constituted a majority of college freshmen for the first time in 1985 (Astin, 1986). Females currently represent 38 percent of all adult workers with four or more years of college.

More education and training apparently do help women obtain jobs. A report prepared for the World Conference on the United Nations Decade for Women showed that the more education women have, the better their chances for paid employment. In 1984, among women aged 25-64, 78 percent of those with four years or more of college and 64 percent of those with four years of high school were working, while only 30 percent of women with eight years of schooling or less were working (see Fig. 5).

Furthermore, a recent evaluation of the JTPA program indicates that training in nontraditional fields can make a significant difference in raising the average hourly wage for females. At four JTPA sites, women in nontraditional programs earned an average of 87 cents more per hour than all women trained through those programs. In two cases, nontraditionally trained women were earning as much as 88 cents more per hour than the average male trainee (Walker et al., 1985). Unfortunately, there is little evidence that JTPA is actively encouraging women to enter nontraditional training programs.

The major demographic trends, then, are toward increased educational attainment for women and an increase in the number of women in the work force. The combination of these trends does not support the Civil Rights Commission's contention that discrimination in the educational system is the principal barrier to wage equity for men and women. Although there are many equity issues still to be resolved in the educational arena, the overarching problems are societal; their resolution will require the cooperative efforts of many sectors.

Summary

The data presented above form an important frame of reference for examining the goals and approaches in the area of sex equity embodied in the Perkins Act. Analyses of female participation in the labor force show the increasing numbers of mature women going to work—women who do not belong to the target groups of in-school females and displaced homemakers that the 1976 Amendments were intended to serve. Data on women's and men's earnings show a persistent gap that has particularly harsh effects on the poverty rates among female-headed families. Differences in educational attainment do not fully explain this gap, although some features of the schooling women receive may well contribute to it.

Figure 5

Labor Force Status of Women, Age 25 to 64, By Years of School Completed March 1984

(Numbers in Thousands)

Labor Force Status and Years of School Completed		Total	Percent of Total	Women	Percent of Women
Civilian Noninstitutional Population		113,893	100.0	58,901	100.0
Elementary:	8 yrs. or less	10,618	9.3	5,059	8.6
High School:	1-3 yrs.	13,197	11.6	7,068	12.0
	4 yrs. only	46,209	40.6	26,310	44.7
College:	1-3 yrs.	19,636	17.2	10,100	17.1
	4 yrs. or more	24,232	21.3	10,368	17.6
Civilian Labor Force		86,001	100.0	37,234	100.0
Elementary:	8 yrs. or less	5,818	6.8	1,917	5.1
High School:	1-3 yrs.	8,545	9.9	3,472	9.3
	4 yrs. only	34,603	40.2	16,709	44.9
College:	1-3 yrs.	15,812	18.4	7,050	18.9
	4 yrs. or more	21,223	24.7	8,086	21.7
Labor Force Participation Rate			75.5		63.2
Elementary:	8 yrs. or less		54.8		37.9
High School:	1-3 yrs.		64.7		49.1
	4 yrs. only		74.9		63.5
College:	1-3 yrs.		80.5		69.8
	4 yrs. or more		87.6		78.0
Employed		80,365	100.0	34,953	100.0
Elementary:	8 yrs. or less	5,144	6.4	1,691	4.8
High School:	1-3 yrs.	7,488	9.3	3,070	8.8
	4 yrs. only	32,097	39.9	15,646	44.8
College:	1-3 yrs.	14,980	18.6	6,678	19.1
	4 yrs. or more	20,655	25.7	7,868	22.5

Figure 5
(Continued)

Labor Force Status of Women, Age 25 to 64,
By Years of School Completed
March 1984

(Numbers in Thousands)

Labor Force Status and Years of School Completed		Total	Percent of Total	Women	Percent of Women
Unemployed		5,635	100.0	2,280	100.0
Elementary:	8 yrs. or less	675	12.0	226	9.9
High School:	1-3 yrs.	1,056	18.7	401	17.6
	4 yrs. only	2,505	44.5	1,061	46.5
College:	1-3 yrs.	831	14.7	372	16.3
	4 yrs. or more	568	10.1	218	9.6
Unemployment Rate			6.6		6.1
Elementary:	8 yrs. or less		11.6		11.8
High School:	1-3 yrs.		12.4		11.5
	4 yrs. only		7.2		6.3
College:	1-3 yrs.		5.3		5.3
	4 yrs. or more		2.7		2.7

Source: U.S. Department of Labor, Bureau of Labor Statistics.

The Perkins Act

The issue of women's economic status and their lack of competitiveness in high-paying jobs became focal points for testimony leading up to reauthorization of the Vocational Education Act in 1984. Additionally, there was an increasing social imperative to serve females who were neither in-school young women nor displaced homemakers; newly important groups included women aged 24 to 30 and the "new poor" single female heads of households. Sadly, teenage pregnancy was moving this latter group of women into the labor force and creating greater needs for assistance in vocational training. As reauthorization neared, arguments for keeping the sex equity provisions of the 1976 Amendments were strengthened by the economic argument of a national need to train the growing female labor sector.

The Perkins Act reflected these economic and social imperatives in its provisions to meet the vocational needs of women and to reduce sex stereotyping and bias. Its themes included the following:

- Assisting women, single parents, displaced homemakers, and young females to obtain marketable skills;
- Creating greater access to vocational education, especially in high technology occupational areas;
- Reducing the limiting effects of sex role stereotyping.

Like the 1976 Amendments, Perkins authorized some funds for sex equity activities and required states to have full-time sex equity staff to manage them. In contrast to the Amendments, Perkins defines a relatively directive, managerial role for the Sex Equity Coordinator.

States began to implement the Perkins Act under conditions of change in both the vocational and the general education systems. To begin with, the Act called for a reorganization of state vocational education practices in order to comply with its funding intricacies and coordination requirements. In addition, the educational reform movement had produced a trend toward increased state graduation requirements in academic subjects, a factor that many educators believed would ultimately result in less time for vocational programs. In some instances, another unsettling factor was budget cuts that would potentially curtail or eliminate some vocational programs.

This turmoil may have contributed to the lack of imagination and planning shown by states in their responses to the new provisions for sex equity. The methods and strategies for implementation, largely left to the discretion of the states, have been reminiscent of activities under the previous legislation: more grants for special projects, more model development, more workshops and technical assistance. Most states are moving forward a notch at a time on the continuum of public information, resource development, and technical assistance. The additional activities have consisted of more grants for direct service provision, especially for the newly identified populations, and more monitoring of local programs. This latter point may lead to positive results, given the research link between close monitoring and increased nontraditional enrollments cited earlier.

In general, the lack of innovative strategies suggests that the people and organizations concerned with sex equity provisions under the Perkins Act have failed to make optimum use of impact information on the strategies used under the 1976 Amendments. The findings of the late 1970s and early 1980s that little significant progress has been made in nontraditional enrollments and that attitudinal problems remain in schools and in society at large have either been ignored or have not stimulated thought about alternative approaches. Several new lines of research, discussed in the next section of this paper, could help build a foundation for more effective strategies.

Issues and Recommendations

The remainder of this paper discusses current and continuing issues surrounding female access to high-quality vocational education and suggests some research strategies that would more directly address these barriers. The overall theme is that research and action need to go beyond "more of the same" in order to meet the challenges posed by new social and economic trends and to improve on the record of the previous efforts.

Many barriers to sex equity in vocational education are identified in the literature. Attitudes, lack of counseling, logistics, and personal factors all play a role. It is also important to bear in mind that while overall access to vocational education has been improved, access to quality vocational programs remains a major issue to be addressed. Legally, the doors are open, and women are able to enter any line of work or training. The National Assessment, however, must look beyond legalities to the real status of access to vocational education for women and girls. The following discussion is organized around five areas that are particularly critical if sex equity in vocational education is to move ahead.

Attitudes and Influencers of Attitudes

Evaluations of sex equity in vocational education consistently tell us that attitudes have changed little (MSACVE, 1985; Sadker, 1982). Evidence is also available on the factors that influence attitudes. Longitudinal data from the High School and Beyond study have shown that students' attitudes are most influenced by peers and parents. Social research points to early socialization in the home via media and family influences (Schwartz, 1982). Counselors also continue to have influence through their program recommendations for females.

Assessing state efforts to influence student and parent attitudes should be an important activity. However, surveys of counselors' attitudes are of limited value because counselors recognize that nonsexist answers are the ones considered correct.

Because some research suggests that sex-related attitudes are malleable, the development of model practices for changing attitudes would be worthwhile. A first step would be to review sociological and marketing research on strategies for influencing attitudes and preferences. These may include activities that are unusual for educators, such as TV and radio spots, possibly as part of a nationwide policy for the use of media. The United Negro College Fund has been extraordinarily successful in promoting minority access to higher education through its "A mind is a terrible thing to waste" advertisements. National-level groups with strong business participation such as NACVE and the American Vocational Association (AVA) are likely to be receptive to similar publicity-oriented strategies for encouraging young women to participate in nontraditional education and training opportunities (McPartland, 1986).

Future work related to attitudes should also include programs in conjunction with the major employers, such as IBM and AT&T, who influence attitudes on a wide scale.

Physical and Environmental Access

Litigation and the mass media have ensured that women are no longer denied access to programs solely on the basis of sex. Theoretically, all careers and occupations have an open-door policy. Access issues on the forefront today are related instead to physical and environmental factors such as program location, transportation, child care, and financial assistance. Problems associated with such factors can impede women's ability to avail themselves of vocational and technical training opportunities.

It is sometimes assumed that the provision of special services, such as transportation, would greatly assist women in taking advantage of training opportunities. Adequate assessment of such ancillary services should be designed to shed light on their usefulness to clients and their cost-efficiency. One hypothesis is that direct provision of ancillary services may be inefficient and of marginal utility compared with the alternative of coordination with other service-providing agencies.

Case studies of the availability of support services by geographic area would be useful here. They could indicate whether, as seems likely, urban areas contain many agencies that offer the type of assistance that could facilitate enrollments. If Hodgkinson (1986) and others are correct in saying the urban areas are where sex equity activity should be concentrated, future reauthorization may urge states to explore coordination with these other agencies rather than attempt to develop duplicative services.

Instructional Quality Issues

Poor quality programs, while detrimental to all students, are often even more devastating for women. Indications are that special needs students (including women) are all too often shunted into less demanding or inferior vocational education programs. Typically, such programs lead to jobs on the low end of the economic scale. Placing female students in programs with limited job opportunities does the students no favors.

In particular, special projects that are relatively high-intensity, short-term experiences pose a problem for sex equity. Although such projects engage a degree of female involvement, they are often conducted in isolation from a comprehensive program and leave the trainee with only a smattering or narrow band of skills. Especially in the case of programs funded by a special grant, the client is often left partially prepared and without alternatives when the funding runs out. Research and evaluation are needed to determine the usefulness of these short-term programs in various settings and to identify effective means for integrating them into stable and continuous programs and settings.

Another issue of instructional quality worth investigating is the application of competency-based instruction (CBI) to women's needs. Particularly for training of postsecondary students, CBI seems to offer improved program content, immediate feedback and reinforcement for students, a strategy for accommodating individual abilities, and flexibility in scheduling. Are programs that are tailored to women's needs provided in a competency-based format? Little research information is available on this question. State evaluation data and other research should be used to help us take stock.

Other instructional quality issues revolve around the distribution of the quantity and quality of classroom interaction. If a woman is placed in an occupational training program of potential value, is there equality of instruction once the classroom door closes? Based on educational research that is not specific to vocational education, the expected answer would be "No." Male students in general tend to get more instructional attention--including both praise and criticism--than females (Sadker & Sadker, 1982). Because they tend to demand more teacher attention, males receive more stimulation. Minority females get less attention than any other student group (Harvey, 1986). Do these patterns hold true in vocational classroom and training settings? If so, then girls are probably leaving vocational education programs with fewer skills, less practice, and more unanswered questions than their male peers.

The quality of preservice and inservice programs for teachers should be examined from a sex-equity standpoint. Are teachers actually being trained to overcome inequitable behavior? Case studies could examine inservice programs and teacher preparation curricula for inclusion of equity concerns.

Research is also needed to determine the extent to which equity-related teacher inservice has been successful in vocational and technical training programs. Inservice training for current teachers has been one of the major thrusts of state-based equity activities. However, there are indications that many teachers remain unaware of the extent of their sexist behavior. Survey methods are probably not appropriate for measuring the effects of inservice success in this area for the simple reason that teachers are good test takers. Broad-scale observational studies or unobtrusive methods would provide more valid data. Student survey techniques may also be useful and less costly.

Student Skills

It is incumbent on vocational education generally to encourage high standards in order to eliminate poor quality programs. For women, gaining access to and reaping the benefits of high-quality vocational training are especially important.

We don't know much about the scholastic profile of female enrollees in vocational programs specifically. However, there is some evidence that the achievement levels of high school girls is lower than that of boys. In a sample of high school students tested in the spring of their sophomore and senior years, females lagged behind males in math and science skills, with the gap tending to increase slightly over the two-year period. Reading scores for males and females in this study were nearly equivalent (NCES, 1985). Another study, however, points to a greater decline in vocabulary and reading tests scores among females from 1972 to 1980 than for males (Rock et al., 1985). Three national assessments of the reading skills of 17-year-olds also suggest that females are slipping farther behind their male peers (NAEP, 1981).

If girls have weaker academic skills than boys, this may in part account for the large female enrollments in programs leading to jobs at the lower end of the economic scale. Certainly better academic skills can enable a student to derive more benefits from vocational training, with long-term effects on program completion, placement, and productivity on the job. It is, therefore, important for programs to provide for appropriate testing to determine academic deficiencies at the time of vocational program enrollment.

Research should determine the extent to which states are addressing the need for women to have the basic academic skills they need to fully benefit from vocational programs. In particular, the extent of basic skills assessment activities at class or program enrollment should be studied.

The issue of student skills is not confined to the area of academics. The female student also needs what are usually called "employability" or job survival skills. Using employer surveys, a recent study concluded that academic skills are not among the most important traits that employers require. In fact, occupational skills do not top the list either. As rated by employers, the most important skills are shown in Table 6.

Research should address the extent to which states have required (and local programs have included) employability skills in their vocational curricula. This is especially important in programs for the women who urgently need jobs, such as displaced homemakers, single parents, and teen parents.

Table 6

Percentage of Employers Rating Characteristics as Extremely Important

For Males	Characteristic	For Females
96	Dependability	98
82	Attitude	86
68	Good team member	75

State Administration

A final area for research is state administration. For example, the Perkins Act heavily emphasizes a managerial role for the Sex Equity Coordinators, who under the previous legislation had a less directive role. Has this change made a difference in states' programs?

More broadly, descriptive evaluation could determine how successful states have been in going beyond access issues to encouraging and assisting local educational agencies in the development and implementation of programs that are truly nondiscriminatory on the basis of sex. If such an evaluation were designed to yield a profile of successful state practices, the model practices could be widely disseminated. Similarly, research should examine different ways of distributing funds within states to determine the most effective funding approaches. State officials could adapt these models for their own use; federal policymakers could use them to inform legislation.

Summary

In summary, there are a number of issues related to the current status of sex equity in vocational education that have not been adequately explored. Were Congress to ask, today, what the impact of the Perkins Act's sex equity provisions has been on access, enrollments, and outcomes for women and girls, we would be hard pressed to tell them. Critical issues that warrant immediate attention include physical and environmental access to vocational programs, the quality of programs and curricula available to females, differential treatment and student skills, and state administration. Specific questions and suggested research strategies in these areas are summarized in the remaining pages of this paper.

Summary of Questions Generated
By Issue Area

Attitude and Attitude Influencers

QUESTIONS: To what degree have state efforts changed student and parent attitudes toward female participation in nontraditional occupations?

Strategies: Examination of state enrollment, placement, and retention data. High School and Beyond data have some information on career preferences.

Surveys or a composite of already conducted assessments on attitudes and preferences of female vocational enrollees compared with completion and placement in nontraditional programs.

Comparison studies of traditional with nontraditional enrollees' attitudes.

Investigate development of addition to Strong or Kinder interest tests to address attitudinal issues.

Implications for Future: Research and development of a set of successful practices or models for influencing attitudes/behaviors toward nontraditional enrollments. Disseminate information widely through nontraditional means.

Develop national policy to work with national media executives and major employers to overcome attitudinal barriers.

Physical and Environmental Access

QUESTIONS: What physical and environmental inhibitors to successful vocational program participation exist for women?

What services have been provided under the law to overcome these inhibitors?

How successfully have these services been coordinated with other social service agencies offering similar or complementary services?

How cost effective have these coordinative service provision agreements been?

Is there a geographic relationship with type of service provision and degree of coordination of services among agencies?

How do recipients of such services perceive their relative value?

Strategies: Descriptive analysis based on a case study approach would address most questions on type of service augmented by surveys to determine inhibitors.

Surveys of clients coupled with followup interviews to determine client perception of services should be done.

Cost analysis studies could yield comparative data on costs by service type.

Demographic study of coordinative relationships could shed light on where coordination works best and why.

Implications for Future: Legislative policy regarding support of services to address physical and environmental barriers should be determined by the findings of studies in this area.

Instructional Quality - Program

QUESTIONS: What is the nature and rationale for short-term programs for women?

What is the relative benefit of isolated (i.e., one course, one semester) intensive programs compared with more comprehensive programs for female enrollees?

Is there a greater benefit for one subpopulation (e.g., displaced homemaker over teen parents) to justify use of these program offerings?

What are the features of successful programs of this nature?

To what extent are these programs coordinated with school services (e.g., counseling) and community services?

Strategies: Descriptive research using surveys, case studies, and interviews should garner information on most questions. Benefits will need to be discretely defined.

Implications for Future: Results of these investigations should determine the extent to which future legislation will encourage variable programming formats.

Instructional Quality - Curriculum

QUESTIONS: What advantage does the competency-based instructional format offer for programs targeted to women?

Are programs which are tailored to women, targeted for women, or which have high female enrollments competency based?

Strategies: State evaluation data, State Advisory Council Reports, and R&D project final reports available through ERIC may include this information which could be compiled and analyzed. If data are lacking from these sources, surveying program managers at the local level would be advised. This could be done jointly with other research efforts to gain information on program models.

Implications for Future: Findings may support the current law's attention to competency-based curriculum development. It would be appropriate to strengthen future legislation regarding competency-based instruction as the preferred approach.

Instructional Quality - Differential Treatment

QUESTIONS: To what extent is differential treatment practiced in vocational education?

What effect does equity-related inservice have on differential treatment?

What practices/strategies have proven most effective in combating differential treatment?

To what extent is training to reduce inequitable teacher behavior incorporated into preservice and inservice programs?

Strategies: Vigorous review of current research on this topic in general education is needed.

Descriptive research and comparison studies should be undertaken. Ethonographic techniques may be useful in developing some hypotheses which could be tested.

More direct observational studies could be useful if well controlled. Unobtrusive measures could be used effectively to discover or verify indicators of differential treatment. Student surveys may be useful and more cost effective.

Implications for Future: Future legislation may strengthen its requirements regarding vocational personnel development in light of these findings.

Instructional Quality - Student Ability

QUESTIONS: What does social and educational research reveal about the declining rate of female academic test scores?

Do female vocational program enrollees represent a higher level of illiteracy and lack of basic skills than female enrollees in general education?

What does a comparison of academic competence of females enrolling in traditional vocational programs with females enrolling in nontraditional programs reveal?

To what extent are state and local education agencies providing for appropriate testing to identify academic deficiencies prior to vocational program enrollments?

What have states done to accommodate the need for basic academic skills in order for women to benefit from vocational programs?

To what extent are employability skills being taught in local vocational programs, especially those for women closest to employment?

Strategies: Review of educational research in general education and data subsets from national longitudinal and testing databases should be accomplished to find answers to some of these questions.

Comparison studies against valid performance measures would be helpful in addressing questions posed here.

Implications for Future: Information from research on these questions should guide policy for state and local program requirements.

State Administration

QUESTIONS: How successful have states been in going beyond open access to vocational training programs?

To what degree have program models been disseminated and replicated?

What financial incentives for local programs have achieved the greatest benefits?

What effects can be found from the role change of the State Sex Equity Coordinator from an administrative position under P.L. 94-482 to more of a managerial position under P.L. 98-524?

Strategies: A comprehensive collection of data is needed to determine if and how states have progressed. Descriptive studies can address several of these questions. Others may be better made a part of other research utilizing comparison techniques.

Content analysis to identify trends and document progress through state annual descriptive reports may be sufficient to respond to some questions, but it is highly subject to interpretation by the researcher.

Implications for Future: Decisions about the ability of states to progress, to utilize results of R&D from previous legislation, and to administer the complexities of federal legislation should be assisted by information generated by work in response to these questions.

References

Congressional Budget Office. (1986). Trends in educational achievement. Washington, D.C.: Author.

Harrison, L. R., & Dahl, P. R. (1979). Executive summary of the vocational education equity study. Palo Alto, CA: American Institutes for Research.

National Center for Education Statistics. (1985). The condition of education, 1985. Washington, D.C.: U.S. Government Printing Office.

Walker, G., Feldstein, H., & Solow, K. (1986). An independent sector assessment of the job training partnership act. Grinker, Walker & Associates.

American Vocational Association. (1985). Carl D. Perkins vocational education act resource guide. Arlington, VA: Author.

Bennett, et al. (1982). A plan to assess state and local efforts in the elimination of sex bias and discrimination in vocational education in Illinois: A final report. Springfield, IL: Illinois State Board of Education.

Bose, C. E., & Priest-Jones, J. (1980). The relationship between women's studies, career development and vocational choice. Washington, DC: Government Printing Office.

Boyer, E. L. (1982). High school: A report on secondary education in America. New York, NY: Harper and Row Publishers.

Campbell-Thrane, L., & Siloani-Lacey, C. (1981). Equity in vocational education, (R&D Series No. 213). Columbus, OH: Ohio State University, National Center for Research in Vocational Education.

Harvey, G. (1982). Finding reality among the myths. Kappan, 67(7), 509-512.

Hodgkinson, H. (1986). Guess who's coming to work. Columbus, OH: Ohio State University, National Center for Research in Vocational Education.

Kelly, J. M., & Campbell, B. L. (1986). Satisfactions and dissatisfactions of people in traditional and nontraditional jobs. Lubbock, TX: Texas Education Agency.

Kerr, C. (Ed.). (1979). Work in America. New York, NY: Van Nostrand Reinhold.

Lary, A., & Landay, B. (1985). Georgia's students and employees in vocational education. Atlanta, GA: Georgia Department of Education.

McPartland, J. M., et al. (1986). The school's role in the transition from education to work: current conditions and future prospects, (OERI No. 362). Washington, DC: U.S. Department of Education.

Michigan State Advisory Council for Vocational Education. (1985). Analysis of Michigan's sex equity efforts in vocational education with recommendations. Lansing, MI: Author.

Naisbitt, J. (1982). Megatrends. New York, NY: Warner Brooks.

National Advisory Council on Vocational Education (NACVE), & National Advisory Council on Women's Education Programs. (1980). Increasing sex equity. Washington, DC: Institute for Women's Concerns.

North Carolina State Division of Vocational Education. (1986). Annual status report on male and female students and employees in vocational education. Raleigh, NC: N.C. Department of Public Instruction.

Sadker, M. P., & Sadker, D. M. (1982). Sex equity handbook for schools. New York, NY: Longman.

Schwartz, H. (1982). Equity from an anthropological perspective. Columbus, OH: Ohio State University, National Center for Research in Vocational Education.

Sherman, S. W. (Ed.). (1983). Education for tomorrow's jobs. Washington, DC: National Academy Press.

Shuchat, J. (1981). The nuts and bolts of NTO. Cambridge: Technical Education Research Center.

Technical Education Research Center (TERC). (1981). Illinois sex equity project. Springfield, IL: Illinois State Board of Education.

U.S. Committee on Civil Rights. (1985). Comparable worth: an analysis and recommendations. Washington, DC: U.S. Committee on Civil Rights.

U.S. Department of Labor. (1985). The United Nations decade for women, 1976-85: Employment in the United States. Washington, DC: Author.

Yankelovich, D. (1981). New rules. New York, NY: Random House.

EVALUATING THE SPECIAL POPULATIONS AND EQUITY PROVISIONS OF FEDERAL VOCATIONAL EDUCATION LEGISLATION

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Introduction

Since its inclusion in federal education policy (by the Smith-Hughes Act of 1917), vocational education programs receiving federal support have been charged with varying levels of responsibility for educating the masses. In the early 1900s, with fewer than 20 percent of the high school age population enrolled in secondary schools (Lazerson & Grubb, 1974), the broadening of the school curriculum was essential for encouraging greater numbers of students to avail themselves of public education opportunities. As David and Hendrickson (1981) noted, the members of the 1914 Commission on National Aid to Vocational Education, whose report had a major influence on the founding legislation, maintained that vocational education was needed to democratize the education of the country.

> The social and educational need for vocational training is equally urgent. Widespread vocational training will democratize the education of the country. . . by recognizing different tastes and abilities and by giving an equal opportunity to all to prepare for their life work. Equality of opportunity in our present system of education is not afforded to the mass of our children. While our schools are opened freely to every child, their aims and purposes are such that a majority of the children are unable to take advantage of them beyond a certain grade and hence do not secure at public expense a preparation for their work in life (p. 12).

While somewhat different in focus, a primary mission of the federal role in vocational education today remains one of assuring equal educational opportunity. In addition to assisting states to expand and modernize vocational education programs addressing current labor market needs, the Carl D. Perkins Vocational Education Act (P.L. 98-524) includes a second major goal, to:

> Assure that individuals who are inadequately served under vocational education programs are assured equal access to quality vocational education programs, especially individuals who are disadvantaged, who are handicapped, men and women who are entering nontraditional occupations, adults who are in need of training or retraining, individuals who are single parents or homemakers, individuals with limited English proficiency, and

individuals who are incarcerated in correctional institutions (P.L. 98-524, Section 2).

This paper provides an analysis of current federal vocational education legislation and offers some recommendations for evaluating the equity provisions of the Act related to serving special populations. In most federal and state legislation related to human services, there exists an array of related equity issues that are well beyond the scope of issues to be addressed here. The general questions of who receives access to vocational education programs, how access varies across states and vocational program areas, and the quality and appropriateness of the instruction are vital questions, many of which are addressed substantively in the other papers of this publication. The explicit focus in this paper is upon equity as it relates to special student populations.

Following a brief summary and analysis of the special population provisions of the current law, an examination of the progress and problems occurring most recently is undertaken. The general conclusions and recommendations are intended to footnote the major issues that should be carefully scrutinized for purposes of developing informed and responsive federal policy.

As will be noted later, there are multiple conceptions of educational equity and equal opportunity found in the literature. While the field lacks a definitive theoretical basis for defining and evaluating educational equity, three broad areas have routinely been a part of efforts to evaluate policy focused on special populations. Within this paper, equity in vocational education for special population students will be examined in terms of: **access** (i.e., equal opportunity to participate in programs), **treatment** (i.e., the fair and just provision of support services for students requiring additional assistance to succeed in vocational programs), and **outcomes** (i.e., the extent to which students achieve similar types and levels of benefit from program participation) (Plihal, Ernst, & Rehm, 1986).

In the following discussion, emphasis will be directed toward a general analysis and discussion of the equity provisions. Notwithstanding the fact that various special populations have, to some extent, very specialized or atypical needs and problems in vocational education, there are some common aspects and general principles that undergird the policy framework (e.g., providing equal access, assuring equal and appropriate treatment for individuals and special groups, providing supplemental support services, and placing students in mainstream, regular programs). Each of these major equity provisions has varying degrees of importance and programmatic relevance to the various special population groups identified under the Act. However, it is important to recognize that the equity provisions are intended to assist those individuals who are commonly identified as having difficulty in vocational education and/or are likely to encounter difficulty in the labor market. As some authors have suggested (Phelps, 1985; Vetter et al., 1982), there are important pedagogical and resource efficiency reasons for using a comprehensive rather than target group specific definition of special populations.

An Historical Perspective

The equity provisions of the Perkins Act are the product of an extensive evolution of federal and state legislation and significant litigation focusing on civil rights issues. However, it was not until the Vocational Education Act (VEA) of 1963 that the responsibilities of vocational education in the educational equity arena became explicit. The 1961 Panel of Consultants appointed by President Kennedy was extremely critical of existing vocational programs for their lack of attention to the needs of the academically and economically disadvantaged (at the time a new euphemism for the poor), culturally deprived, and potential dropouts. In recognizing a crucial connection between education, reduction of poverty, and increased employability for the poor and disadvantaged, the Panel strongly urged Congress to redirect and refocus the federal role in vocational education to serve the needs of the disadvantaged more directly. In the 1963 VEA, states were authorized for the first time to use federal funds to serve "persons who have academic, socioeconomic, or other handicaps that prevent them from succeeding in the regular vocational education program." This provision clearly reaffirmed Congress' belief in the integral value of vocational education in addressing the nation's significant economic and social dilemmas.

As Congress moved toward reauthorizing the VEA in 1968, members were chagrined to find that few if any states had chosen to initiate programs and services for special populations. As David and Hendrickson (1981) noted, of the more than $980 million spent for vocational education programs under the 1963 VEA, only $19.8 million (approximately two percent) was spent on programs for students with special needs. To strengthen the equity measures, Congress included several significant provisions in the 1968 VEA Amendments. Of the federal allotment to states, a minimum of 15 percent was to be spent for the disadvantaged and 10 percent for persons with handicaps. These provisions became known as the "set-asides." Additionally, a minimum of one-third of the state allotment for consumer and homemaking education programs was to be expended in areas that were economically depressed or had high unemployment. Under Section 102(b), a special program for the disadvantaged was established which was also intended to serve communities with high unemployment or severe economic difficulties. This program was supported totally with federal funds, whereas in other programs states were encouraged to share in the costs.

The Education Amendments of 1972 included Title IX, which prohibits discrimination on the basis of sex in all federally assisted education programs. This set of requirements proved to have a profound effect upon the 1976 VEA Amendments, as well as all other federal education programs. The passage of the Bilingual Education Act in 1974 extended the provisions of equal educational opportunity to those individuals with limited English-speaking ability and created a special federal grant program for bilingual vocational training programs. "The Congress viewed bilingual training programs as an instrument both of economic and social policy, a dual and interrelated emphasis which lay at the heart of Federal vocational education policy" (David & Hendrickson, 1981, p. VIII-9).

As noted above, the implementation of federal civil rights laws has had a significant effect upon equity policies within the VEA. In addition to the sex equity and bilingual education provisions, titles of the Civil Rights Act of 1964 and the Rehabilitation Act of 1973 prohibited discrimination on the basis of race, national origin, and handicap in programs receiving federal assistance. To provide programmatic and fiscal support for these civil rights mandates, Title I of the Elementary and Secondary Education Act of 1965 and P.L. 94-142—the Education for All Handicapped Children Act of 1975—were enacted, authorizing two of the largest federal grant programs currently in operation. Collectively, these statutes, and accompanying appropriations actions, provide states with approximately $4.5 billion annually to implement remedial and special education programs. Title II of the Education Amendments of 1976 constituted a major refocusing of the federal role in vocational education with respect to a number of areas, especially elimination of sex discrimination and sex role stereotyping, program planning and evaluation, and services to handicapped and disadvantaged individuals. P.L. 94-482 extended the Special Program for the Disadvantaged and provisions for the federally administered Bilingual Vocational Training program. The set-aside provision for the disadvantaged was increased to 20 percent of the states' allotment, while the handicapped set-aside remained at 10 percent. The legislation further specified that disadvantaged and handicapped students be served, to the maximum extent possible, in regular (mainstream) vocational education classes. For the first time, states were asked to match equally the federal expenditures for disadvantaged and handicapped students with state and/or local funds. In reviewing the regulatory history that followed enactment of the 1976 Amendments, Phelps (1984) noted:

> The initial regulations for the Act further interpreted these requirements to mean that set-aside funds could only be used to pay for the excess costs associated with serving special needs students. Subsequent regulations allowed for VEA and matching state and local funds to be used for paying the full cost of serving special needs students who were enrolled in a separate program. Schools were rewarded financially when they used separate programs and punished when they placed special needs

> students in regular classes. Thus, the policy of encouraging mainstreaming appeared to be compromised to some degree (p. 4).

In March 1979, in response to continuing patterns of discrimination in vocational education programs, the Department of Health, Education and Welfare (DHEW), Office of Civil Rights (OCR), issued guidelines for the elimination of discriminatory practices in vocational education programs (*Federal Register*, March 21, 1979). These guidelines were issued as a result of injunctive orders entered by a federal court of the District of Columbia in *Adams vs. Califano*, which cited OCR for failure to enforce civil rights requirements in vocational education. Issuance of the guidelines was intended to help state and local administrators understand their civil rights obligations, as well as to point out ways in which VEA funding might assist in providing programs and services to those individuals being denied equal opportunities. The guidelines require state boards of vocational education to develop and implement compliance programs to prevent, monitor, and identify discriminatory practices in vocational education on the part of *all* local and state educational agencies. Annually, states submit a compliance report to the U.S. Department of Education (ED) on the status of discriminatory practices pertaining to distribution of funds, program admissions criteria, operation of programs, and employment of staff (Silverstein, 1982).

In conducting the National Assessment of P.L. 94-482, Title II, the National Institute of Education (NIE) and its contractors for special studies identified a number of problems and concerns relative to the equity provisions of the Act, as well as the OCR guidelines. Among the major findings were the following:

- The participation of women in nontraditional vocational education programs remains markedly low. . . females are still heavily concentrated in programs traditional to their sex. . . However, there has been a slow but steady decrease in sex stereotyping in vocational education (David & Hendrickson, 1981, pp. VIII-29, 32).

- Funds are distributed to states with little or no regard to differences among them in fiscal capacity and no regard to the relative costs of education (Benson & Hoachlander, 1981b).

- The intrastate distribution procedures allow states to allocate federal funds in line with goals and priorities that may or may not be congruent with those of federal policy (Benson, Hoachlander, & Polster, 1980).

- These VEA Amendments, in combination with civil rights and other legislation, have stimulated the states to make a greater effort to serve students with special needs (Beuke et al., 1980).

- The manner in which the excess costs and matching requirements are interpreted and implemented may inhibit localities from spending federal funds to provide programs and services for students with special needs and creates a disincentive to mainstreaming these students in regular classes (David & Hendrickson, 1981).

Generally, these concerns were echoed by professionals in vocational education and the civil rights advocacy groups during the extended hearings on the reauthorization of the VEA during 1982-84. However, considerable disagreement was noted among the expert witnesses and position statements regarding the most effective procedures for achieving what nearly everyone agreed were important and valuable equity goals for federal vocational education policy. The Carl D. Perkins Vocational Act, enacted in October 1984, sought to extend, refine, and more effectively coordinate the access and equity provisions of the 1976 VEA Amendments.

The Special Populations/Equity Provisions of the Carl D. Perkins Vocational Education Act of 1984

Enactment of the Perkins Act (P.L. 98-524) in the fall of 1984 was expedited by the death of Congressman Carl Perkins of Kentucky, who had long been an advocate for federal vocational education programs. With the death of Congressman Perkins, members of Congress sought to pass a bill that would reflect his stewardship of numerous pieces of federal education legislation, including the landmark Elementary and Secondary Education Act of 1965 and the 1968 and 1976 VEA Amendments. The Conference Committee had the difficult task of resolving some 258 points of conflict between the Senate passed version (S. 2341) and the House version (H.R. 4164) (Hoachlander, Choy, & Lareau, 1985).

As noted earlier, P.L. 98-524 narrows the purpose of the basic state grant program, which receives 97 percent of the funds appropriated under the Act, to two areas: (1) assuring that individuals who are inadequately served under vocational education programs are assured access to quality programs, and (2) assisting states to expand, improve, modernize, and develop quality vocational programs. Funding set-asides totalling 57 percent of the basic state grant are targeted for the following special populations in Title IIA:

- 22 percent for disadvantaged individuals, including those with limited English proficiency;
- 12 percent for adults in need of training, retraining, or upgrading;
- 10 percent for handicapped individuals;

- 8.5 percent for homemakers and single parents;
- 3.5 percent for individuals who participate in programs designed to eliminate sex bias and stereotyping in vocational education;
- 1 percent for criminal offenders in correctional institutions (Section 202).

The special populations/equity framework of P.L. 98-524 spans each of the major titles within the Act, including assistance to the states, basic state grants, special programs, and national programs. The following sections describe some of the major equity elements found under the various titles of the Act.

Interactive Purposes

The Act includes nine separate statements of purpose. Several of the statements pertain specifically to serving special populations, with the explicit intent of improving the skills, knowledge, and job opportunities for individuals encountering difficulty in school and in the workplace. However, as one examines the other purpose statements and the related titles of the Act, it is readily apparent that achieving equity for special populations is also embedded in many of the other provisions. To illustrate, other purpose statements focus resources and programming on developing high-quality, modern programs that reflect current labor market needs and improving the academic foundations of vocational students. Within these and other sections of the Act, reference is made to assuring that the needs and interests of special populations and women are considered and integrated. To simply provide program access to special populations is no longer a sufficient response.

As vocational education programs, curricula, and facilities are updated to reflect technological changes in the workplace, the access, appropriateness, and quality of the new programs need to be examined in light of their importance to special populations. To provide access to outdated or ineffective vocational programs plays a cruel hoax on disadvantaged and handicapped, as well as other students enrolled in the program. Within the mission of the federal vocational education policy--program improvement, coordinated planning and interagency cooperation, strengthened academic foundations, training and upgrading for adults, improved effectiveness for consumer and homemaking programs--each initiative provides important and valuable opportunities for both special populations and the "regular" vocational education students.

Table 1 describes the major special population provisions of P.L. 98-524. For purposes of discussion, the major provisions have been classified into three categories: policy, planning and evaluation; programs and services; and fiscal provisions. At the

Table 1

Summary of the Major Special Populations/Equity Provisions of the Carl D. Perkins Vocational Education Act of 1984

Key Provisions of the Act	Special Populations	Level of Control	Specific Requirements
Policy, Planning, & Evaluation			
State Planning	All	State Board	State two-year state plan, coterminous with JTPA plan (Sec. 113) Includes assessment of special needs of target populations (Sec. 113)
		Handicapped	Establishes appropriate measures for evaluating effectiveness of programs for the handicapped (Sec. 113)
State Council for Voc. Ed.	All	Governor or State Board of Education	Must include members knowledgeable of special populations and special education (Sec. 112) Responsible for evaluating effectiveness of VEA and JTPA programs in the state (Sec. 112)
Sex Equity	All	State Board	At least one fulltime staff and $60,000 earmarked to address problems of sex bias and stereotyping through program review, data collection, and tech. assistance (Sec. 111(b))
Coordination		State Board	Outline methods in the State plan for joint planning and coordination with programs under JTPA, Adult Education Act, EHA, Title I, Rehabilitation Act, and apprenticeship training (Sec. 113(b)(10))

Table 1
(Continued)

Summary of the Major Special Populations/Equity Provisions of the Carl D. Perkins Vocational Education Act of 1984

Key Provisions of the Act	Special Populations	Level of Control	Specific Requirements
Policy, Planning, & Evaluation (Continued)			
		Local eligible recipient	Describe local plans for coordination with JTPA and adult education (Sec. 115(a))
Vocational Education Data System	All	Center for Statistics	Collect data on student enrollment, programs, completers and leavers, placement and follow-up, staff, facilities, and expenditures on a sample of programs biennially (Sec. 421)
		Handicapped	Collect comprehensive information on handicapped secondary level students in vocational education (Sec. 423)
Programs and Services			
Handicapped/ Disadvantaged Services	Handicapped/ Disadvantaged	State Board	State Board shall assure: equal access in recruitment, enrollment, and placement activities; access to the full range of programs; that programs for the handicapped are conducted in the least restrictive environment; include VE as a component of the individualized education plan (IEP) where appropriate; coordinated planning between appropriate representatives of VE and special education (Sec. 204(a))
		Local education agencies	Provide information on VE opportunities to H & D students and their parents prior to 9th grade (Sec. 204(b))

Table 1
(Continued)

Summary of the Major Special Populations/Equity Provisions of the Carl D. Perkins Vocational Education Act of 1984

Key Provisions of the Act	Special Populations	Level of Control	Specific Requirements
Programs and Services (Continued)			
			Each H & D student shall receive: assessment of interests, abilities, and special needs; appropriate special services; guidance, counseling, and career development; and services to facilitate transition (Sec. 204(c))
Community Based Organizations	Disadvantaged	State Board	CBOs and eligible recipients can receive funds for joint programs to provide severely disadvantaged students with outreach and transitional services, special prevocational programs, career internships, assessment, and intensive guidance and counseling (Title III, Part A)
Bilingual Vocational Training	Limited or non-English Proficient	Secretary of Education	Grants or contracts are provided to local and state education agencies, postsecondary institutions, and other organizations to provide bilingual vocational training and English instruction. Grants also available for bilingual instructor training, inservice training, and demonstration programs (Title IV, Part E)
Fiscal Provisions			
Special Population Set-asides	(See Specific Requirements)	State Board	From the federal allotment each year the following percentages of funds are to be used for special populations: (Sec. 202) 22% Disadvantaged, including LEP

Table 1
(Continued)

Summary of the Major Special Populations/Equity Provisions of the Carl D. Perkins Vocational Education Act of 1984

Key Provisions of the Act	Special Populations	Level of Control	Specific Requirements
Fiscal Provisions (Continued)			
			12% Adults in need of retraining or training
			10% Handicapped
			8.5% Single parents and homemakers
			3.5% Elimination of sex bias and stereotyping
			1% Criminal offenders in correctional institutions
Uses of funds	Disadvantaged Handicapped	Eligible Recipients	For D & H students in regular VE programs, expenditures are limited to supplemental or additional staff, equipment, materials and services not provided to other students in the program (Sec. 201(c)(1))
			For D & H students in separate programs, federal funds can be used for up to one-half of the costs which exceed the average per pupil expenditure of the eligible recipient (Sec. 201(c))
Matching	Disadvantaged Handicapped	State Board	The nonfederal share of costs for vocational education for the D & H shall come equitqably from state and local sources, except when the state determines that an eligible recipient cannot be reasonably be expected to provide such costs from local sources (Sec. 502(b))

outset, it should also be noted that Congress has failed to fund in the past two years three relatively small special population provisions of the Act (Adult Training, Retraining, and Economic Development; Demonstration Centers for the Retraining of Dislocated Workers; and Model Centers for Vocational Education for Older Individuals). Consequently, these programs are omitted from the discussion here.

Policy, Planning, and Evaluation

Provisions for special populations are clearly embedded in the major planning, evaluation, and coordination activities of the Act at both state and local levels. As in previous VEA legislation, advocates of special populations are provided with representation on the State Council, and their input is sought in the development of the state plan. With the plethora of federal education and employment legislation related to special populations, there is clear and substantive interest in seeing that programs are appropriately and efficiently coordinated to assure that special students receive carefully sequenced training and essential support services. Further, vocational education is an enormously diverse enterprise that spans the secondary, postsecondary, and adult education and training institutions of our society, making the coordination function as outlined in federal policy especially crucial.

While the overall scope of the Center for Statistics' required data collection for vocational education has been reduced from earlier legislation, considerable importance is placed on the collection of data on the race, sex, and handicapping condition of students and staff. Additionally, state boards are charged with specific responsibilities for assessing the effectiveness of programs for the handicapped.

Programs and Services

While several new special populations were targeted to receive federal vocational education support under P.L. 98-524, the most prescriptive language describing the uses of these funds pertains to handicapped and disadvantaged populations. These two special groups receive a total of 32 percent of the federal funds awarded to the states, which in Fiscal Year 1987 totalled $242 million. In awarding the funds to eligible recipients (i.e., high schools, secondary area vocational centers, and postsecondary educational institutions), the state board must seek a wide array of assurances concerning equal access to programs, mainstreaming whenever possible for handicapped students, and coordination between vocational and special education personnel.

Additionally, high schools and secondary area centers must provide early notification of vocational education opportunities to parents of disadvantaged and handicapped youth and assure that they will provide each student with four essential services: assessment, appropriate support services, guidance and counseling, and transitional services. Over the past decade these services have frequently been provided by schools serving special population youth, but requiring that each student receive all four services through vocational education has raised considerable concern.

In Fiscal Year 1987 the states also received new funds totalling $6 million for serving severely economically and academically disadvantaged individuals. These funds are to be awarded for programs sponsored jointly by eligible recipients and community-based organizations operating programs through the Job Training Partnership Act (JTPA).

P.L. 98-524 also extended the federal discretionary program for Bilingual Vocational Training, which originated as part of the Bilingual Education Act of 1974. This $3.7 million program annually awards grants and contracts for bilingual vocational education programs, which are supplemented with English instruction, as well as for instructor training, research, materials development, and demonstration projects.

Fiscal Provisions

As noted earlier, perhaps the most salient feature of the Perkins Act is its restriction of the use of federal funds to two types of activities: program improvement and serving special populations. While the Act requires states to use 57 percent of their funds under Title IIA, commonly known as the Vocational Education Opportunities program, the operational definition for special populations was also broadened to include adults, single parents and homemakers, criminal offenders, and additional programs to eliminate sex bias and stereotyping. Relative to disadvantaged and handicapped students, the fiscal provisions remained quite prescriptive, requiring that the set-asides be matched by state and/or local funds expended for the same purpose. Further, the controversial requirement that these funds be spent only for the "excess costs" of serving handicapped and disadvantaged learners was retained from the previous legislation.

While the equity goals of earlier VEA programs have been extended and significantly increased in several instances, the ultimate impact of the Act is difficult to predict at this time. While some have lauded the Act as a ". . . dynamic and forward-thinking piece of legislation, reflecting the promise vocational education holds for students with special needs" (Cobb & Kingsbury, 1985, p. 34), others have raised serious concerns. In commenting on the new access and equity provisions of the Perkins Act, Hoachlander, Choy, and Lareau (1985) note:

> . . . if the new law is stronger on 'ends', it is notably weaker on 'means.' By maintaining the 'set-aside' approach to addressing issues of access, the law provides funds for serving

> students with special needs but contains no mechanism for ensuring that services and programs are of high quality. Furthermore, it perpetuates the unworkable notion of 'excess costs' for determining federal support for handicapped students. Moreover, many of the definitions of students with special needs are so broad that, should they want to, states will be able to include large numbers of students under the special needs umbrella, distributing the federal money widely but thinly.
>
> . . . Finally, many local school districts with the greatest needs may be worse off under the new legislation, despite its greater emphasis on improving access. Under the old law, the concentration of handicapped and disadvantaged individuals affected the intrastate allocation of the 'total' basic grant. Under the new law, the concentration of handicapped and disadvantaged students affects only the 10 and 22 percent set-asides. States are free to allocate the program improvement portion of the basic grant any way they choose. Consequently, while local districts with high concentrations of handicapped and disadvantaged students should wind up with no less money for programs for students with special needs, they may enjoy significantly less VEA funding overall. At the very least, the vagueness with which program improvement, innovation, and expansion have been defined will give states sufficient 'wiggle room' to enable them to distribute VEA funds in much the same fashion as they always have (pp. 32-33).

Consequences and Effects: Some Recent Evidence

What impact have the special populations and equity provisions of the Perkins Act and previous federal vocational education legislation had upon vocational education programs and students? Since the Act has only been in place since July 1985, it is obviously naive to believe that consequences derived therefrom are easily discernible. Also, for various other reasons (i.e., intervening federal and state legislation, the lack of current data on vocational education), it is difficult to address this question directly. This section of the paper first summarizes the most recent data and information on enrollment patterns and funding that are available. Second, the findings from recent outcome studies employing national longitudinal data sets are examined to identify broader concerns related to the education and labor market experience of special populations. Last, a brief synthesis of program effectiveness studies is provided.

Given the wide variance in school organization and state policy that exists nationally, the collection and analysis of local and state-level data on federal programs have always been highly problematic ventures. The significant problems and difficulties associated with the Vocational Education Data System (VEDS), which was implemented following the 1976 VEA Amendments, led the Office of Management and Budget (OMB) to suspend the collection of all VEDS data in 1983. For some data, including data on disadvantaged and handicapped enrollment, the suspension began a year earlier. The complex and significant problems associated with the reliability and validity of VEDS information are well documented (Benson, Hoachlander, & Johnson, 1980; Office of Adult and Vocational Education, 1984). However, it is significant to note that since the 1983-84 school year uniform information has not been compiled on the enrollment, expenditures, placement rates, and personnel in vocational education. Any insights or conclusions about the federal investment in vocational education since 1983 are based totally on selected observations and professional conjecture.

Enrollments and Patterns of Participation

With the limitations cited above in mind, the patterns of enrollment by handicapped, disadvantaged, and limited English proficient populations are presented in Tables 2 and 3. In 1980-81

Table 2

Special Needs Enrollment (VEA) and Percentage of Total Enrollment By Program Area
50 States and D.C., 1980-81

Program Area	Enrollment	Enrollment	Percent of Total	Enrollment	Percent of Total	Enrollment	Percent of Total
Argiculture	843,401	31,238	3.7	124,348	14.7	5,852	0.7
Distribution	929,689	16,447	1.8	105,399	11.3	8,399	0.9
Health Occup.	949,652	13,310	1.4	107,777	11.3	7,463	0.8
Occup. Home Economics	573,530	34,777	6.1	127,170	22.2	8,871	1.5
Office Occup.	3,615,048	91,990	2.5	510,552	14.1	43,623	2.2
Tech. Educ.	505,859	8,585	1.7	75,390	14.9	11,251	2.2
Trade & Indust. Occupations	3,221,588	109,467	3.4	473,870	14.7	29,713	0.9
Other NEC*	1,134,034	113,777	10.0	328,930	29.0	11.101	1.0
Consumer & Homemaking	3,189,248	89,153	2.8	543,649	17.0	27,395	0.9
Industrial Arts	1,899,799	47,217	2.5	170,452	9.0	17,483	0.9
Total	16,861,828	556,961	3.3	2,567,537	15.2	171,151	1.0

*Other programs not elsewhere classified

Source: U.S. Department of Education, National Center for Education Statistics, Vocational Education Data System. 3 May, 1983, Table 1109, unpublished data.

these populations constituted nearly 20 percent of all students enrolled in vocational education—a marked increase from the early 1970s when disadvantaged and handicapped students represented less than 13 percent of the enrollment in vocational education (National Center for Research in Vocational Education, 1979). Several key observations can be made from Tables 2 and 3 and other VEDS data tables regarding enrollment trends and participation patterns:

Table 3

Special Needs Enrollments (VEA) By Type of Instructional Setting and Institutional Stream
1980-81

	Mainstream No Support	% of Total	Mainstream With Support	% of Total	Separate Program	% of Total	Total	
Secondary Level								
Handicapped	133,922	37.7	125,406	35.3	95,900	26.9	356,228	
Disadvantaged	N		604,112	82.7	125,585	17.3	729,697	
Limited Eng. Proficient	N		23,832	83.2	4,802	16.8	28,634	
Special Disadvantaged	N		50,743	75.3	16,640	24.7	67,383	
Subtotal	133,922	11.3	804,093	68.1	242,927	20.6	1,180,842	63.8
Postsecondary Level								
Handicapped	42,486	32.7	59,083	47.6	24,300	19.8	125,869*	
Disadvantaged	N		344,038	81.0	80,923	19.0	424,961	
Limited Eng. Proficient	N		42,682	84.7	5,608	15.3	48,290	
Special Disadvantaged	N		53,378	74.0	18,890	26.0	72,268	
Subtotal	42,486	6.2	499,181	74.3	129,721	19.6	671,388	36.2
Total	176,408	9.5	1,303,274	70.4	372,648	20.1	1,852,330	100.0

*Plus 1,188 handicapped individuals whose status was unknown

N = Not Collected

Source: U.S. Department of Education, National Center for Ecucational Statistics, Vocational Education, Vocational Education Data System, 3 May 1983, unpublished data.

- A relatively large percentage of special needs students (10.1 percent) are enrolled in "other programs," which suggests that a variety of special program options (e.g., prevocational skills training, career exploration, work experience) are perhaps being employed. The appropriateness and quality of these nonstandard programs, which are clearly neither occupationally specific nor nonoccupationally specific, are not known.

- Those special students who participate in vocational education appear to have achieved access to the full range of occupational programs from agriculture to technical education.

- As is the trend with total vocational education enrollment, a gradual shift to the postsecondary level is noted. Approximately 35 percent of the special needs enrollment was at the postsecondary and adult levels in 1980-81.

- Concerns expressed earlier relative to placing students in special, separate programs seem largely unfounded by the data in Table 3, which suggest that approximately 80 percent of the students are served in mainstream classes and programs.

Analyses of the sophomore cohort of the High School and Beyond (HSB) study also reveal some interesting insights regarding enrollment and participation by special groups in vocational education. This nationally representative sample includes 12,142 youth who were sophomores in 1980. Data tabulations were recently released from the second followup study, which was conducted in 1984. The second followup includes data describing the complete high school experience of these individuals as well as information reflecting their first two years of post-high school experience. Table 4 provides data on the percentages and means for key variables related to vocational education for all students in the sample, as well as for special target groups. In addition to providing information on female participation (n=6,217), data are included for those individuals from the lowest SES quartile (n=3,198), those who are non-English speaking and come from homes where a language other than English is dominant (n=369), and individuals who identified themselves as being in a special program for handicapped youth (n=909).

First, it is important to realize that these data reflect only secondary-level programs, which according to the last VEDS report constitute 60.9 percent of the total enrollment in vocational education. The only available enrollment data for postsecondary and adult programs are those data available through VEDS prior to 1983. Second, much of the HSB data is self-reported and must be interpreted with caution. To illustrate, those students choosing to indicate

Table 4

Participation in Vocational Education by Special Population Students, High School and Beyond, Sophomore Cohort

Factor	Total	Female	Lowest SES Qrt.	NonEng Spkg.	In Hdcp Program
Avg. no. of Carnegie units taken in high school	19.49	19.89	18.55	18.44	19.70
Avg. no. of Carnegie units in voc ed	3.79	3.89	4.51	2.99	3.96
% of students participating in voc ed	92.03	92.37	94.58	90.02	94.80
% of students participating in nonoccupational voc ed	83.75	87.06	87.87	82.24	85.46
% of students participating in any occup-specific voc ed	73.14	73.00	77.24	64.45	73.82
Avg. no. of Carnegie units earned in occup-specific courses	1.93	1.92	2.28	1.32	1.89
% of students taking specific intro. or advanced courses, by program					
Any intro./advanced course	68.08	68.02	71.80	55.05	69.48
Agriculture	8.29	4.66	9.23	3.18	9.79
Business	36.44	51.64	38.17	29.93	33.53
Marketing & Dist. Educ.	4.98	5.28	5.34	4.21	6.75
Health	1.59	2.27	2.35	.80	2.51
Occupational Home Economics	8.33	13.15	10.02	11.09	8.50
Trade and Industrial	26.28	10.24	28.63	24.31	29.81
Technical	8.97	8.18	5.81	4.20	6.33
% of students taking occup-specific courses with 3 or more credits in one area	21.73	21.74	27.60	10.96	21.27

Source: MPR Associates, Inc. (February 1986). High School and Beyond Tabulation: Classifications of secondary vocational education courses and students. Part I. Washington, D.C.: Center for Statistics, U.S Department of Education.

they were in a special program for handicapped students were, in most cases, students with mild or borderline handicaps. In the HSB data collection activities, there was no confirmation that these students had been formally identified as handicapped and were served by an IEP. Finally, because some of the sample sizes are quite small (e.g., only 369 non-English speaking students in this analysis), the results should be interpreted with extreme caution.

Some of the significant observations from Table 4 are outlined below. As noted in the VEDS data, female students in the HSB cohort enrolled in more nonoccupationally specific courses (most likely consumer and homemaking courses) than did the total group, and when enrolling in occupationally specific programs tended to concentrate in business and occupational home economics.

For those students coming from homes where English was not the primary language and who identified themselves as limited English proficient, their interest and involvement in vocational education were significantly limited when compared to the total sample. On the average, their degree of involvement in vocational courses was approximately one-third to one-half of that of all other students.

Conversely, from the limited pattern of participation by non-English speakers, students from the lowest SES quartile and handicapped students (but to a lesser degree) appear to be overly represented in vocational education programs. While this is neither a new nor surprising finding relative to the disadvantaged group, it is positive evidence for policies and efforts designed to promote mainstreaming for handicapped youth. The overrepresentation of poor students in vocational education raises an intense and justifiable debate regarding the tracking of these (as well as other) students, the effects of institutional discriminatory practices, and the value of vocational education in breaking the "cycle of poverty."

Educational and Employment Outcomes

The refinement of national longitudinal studies, such as HSB and the National Longitudinal Survey (NLS) of Labor Market Experience youth cohort, have allowed for more comprehensive and precise studies of the outcomes and effects of vocational education, particularly vocational programs at the secondary level. Recently, Campbell, Basinger, Dauner, and Parks (1986) completed a study examining several special groups of students (i.e., women, Blacks, Hispanics, Native Americans, Asians, persons of low SES, the handicapped, and persons with limited English proficiency) included in these nationally representative longitudinal studies. Using techniques of multivariate analysis, the study identified the primary determinants of high school curriculum, postsecondary education, earnings, labor force participation, and employment.

Among the prominent findings not noted in the preceding discussion were the following:

- There are pronounced gender differences in the enrollments within vocational education. Males are substantially overrepresented in trade and industrial education, while females are overrepresented in business programs.

- While graduates of the academic curriculum are more likely than those of the other curricula to continue their education beyond high school, vocational graduates are just as likely as general curriculum graduates to pursue postsecondary education. Both Hispanic and Black students are more likely to pursue postsecondary education than are White males.

- Pursuing a vocational curriculum in high school (identified from a transcript analysis) has a payoff in hourly and weekly earnings for youth who are employed in jobs related to their training. However, more than half of those students who had completed a vocational program were employed in jobs apparently unrelated to their training, and no favorable earnings advantage was discernible.

- Significant and pervasive gender differences were noted in earnings. With education and other factors related to productivity controlled, White females earned from eight to 28 percent less than White males. Differences of about 10 percent prevail among males and females who are Black, Hispanic, and low SES. The earnings levels of White males did not differ significantly from those of Hispanic and Black males.

- Both labor force participation and employment appear more continuous for graduates of high school vocational programs than for graduates of other curricula. Generally, women of all racial/ethnic groups have lower rates of labor force participation than White males, and Black women have less regular employment.

These outcome data reveal several interesting and significant insights related to equity in both vocational education and the workplace. While enrollment data would suggest that greater access to vocational education programs has been achieved by many special populations (with the prevailing exception of gender inequity), there appear to be a number of other variables that wash out some of the potential benefits of vocational education (available jobs, desired earnings level, interest in further education, etc.). It is encouraging to note that those individuals choosing to enter the work force in a field in which they received training are rewarded with higher earnings and more continuous employment. However, the consistent gender differences in earnings are disheartening. Clearly, vocational education policies and practices need to devote more attention to reducing the enrollment of women from all racial/ethnic backgrounds in programs leading to low-paying jobs.

Program Effectiveness

How effective are different vocational education programs and program components in serving special population youth and adults? Given the diversity of program models, their intended outcomes, and the limited space for analysis herein, this section focuses solely on programs serving disadvantaged and handicapped individuals. A recent paper by Phelps (1986) provides a more detailed review of the limited number of published program effectiveness studies. Flynn (1982) examined a number of studies documenting the effectiveness of both conventional and alternative vocational education programs serving disadvantaged and handicapped youth. A total of 11 studies, which contained empirical data and sufficient methodological rigor, were located and reviewed. Among Flynn's major findings pertaining to the effects of program design were the following:

- At the secondary level, work-study programs may be an effective means to improve chances of vocational success for mildly mentally retarded youth (Halpern, 1978). Presumably, such work experience enhances the development of broad, vocationally relevant skills.

- Highly structured and intensive programs (such as the Job Club approach) appear capable of greatly increasing opportunities for more severely job-handicapped adults to obtain and retain competitive employment (Azrin & Philip, 1979). Programs with similar characteristics (such as the Job Corps) may enhance the educational and career prospects of educationally and socioeconomically disadvantaged youth as well (Datta, 1980; Mallar et al., 1980).

- Subsidized employment (supported work), on the other hand, appears to be an unpromising option for high school dropouts, although it is successful with women receiving AFDC (Masters & Maynard, 1980).

- Despite the promise of many of the alternative programs reviewed, their replicability on a larger scale remains to be demonstrated.

Recently published studies of CETA and JTPA program models also offer some valuable insights regarding effects generated by different approaches. Taggart (1981, pp. 287-288) offered the following summary analysis of experimental demonstration programs serving economically disadvantaged youth:

- School-based programs aiming to improve "employability skills" through instruction and activities designed to expose youth to work settings and requirements are able to change tested vocational aptitudes, job knowledge, job holding skills, work relevant attitudes, job seeking skills, and sex stereotyping in career goals. However, these attitudinal and skill gains do not markedly alter post-program labor market success except when combined with substantial job development activities so that employers recognize that changes have occurred, and unless the activities are targeted to youth who plan to immediately enter the full-time labor market after graduation. . . .

- Where work sites have been used as classrooms for training in construction trades, with journeymen instructors, linkages to unions, and structured skill progressions, the placement rates in construction, in unions, and in high wage jobs far exceeded those in comparable work projects which did not emphasize training or linkages, even though there were very modest differences in positive termination and employment rates.

- In an experiment testing alternative services for dropout youth, training activities had more impact on post-program employment chances than work and training, which in turn had more impact than work alone.

- . . . work experience can be useful for young people in advancing work force entry. It can be combined with training activities in a sequence, with benefits roughly proportional to the degree of training. A work site may be structured as a training site and can yield some of the benefits of classroom and on-the-job training while producing useful output, but this model is the exception rather than the rule in local work experience programs (p. 288).

These summaries of effective program interventions offer some interesting insights as one reflects upon the provisions of the Act. There seems to be little empirical evidence, for example, to support the provision of assessment, support services, and counseling for every handicapped and disadvantaged student at the secondary level as specified in Section 203 of the Perkins Act. However, the vast vocational special needs literature that has been developed based on conventional professional wisdom and contemporary practice provides substantial support for requiring these services in each local education agency.

Other fields involved in educating special populations have also encountered difficulties in developing an empirical knowledge base to guide the design and conduct of programming and instruction. In their review of special education research on mildly handicapped learners, Macmillan, Keogh, and Jones (1986) noted that only a limited portion of the research has been concerned with teaching. They contend that to date research in the field has been heavily influenced by cognitive and developmental psychology and the study of within-child variables to determine how groups of handicapped children differ from groups of nonhandicapped children. They concluded:

> The evidence derived from the efficacy and mainstreaming work to date suggests that we have not been successful in teaching mildly handicapped learners, regardless of where we place them (special or regular classes), or what we call them (EMR, LD, or "normal"). The challenge before us is to study the instructional process directly, rather than to continue to be preoccupied with variables such as administrative arrangements and labels, influences that account for little variance in achievement differences. The closer we get to the actual instruction, the more likely we can account for substantial proportions of variance (p. 717).

Despite the well-intended social purposes of the civil rights legislation and genuine efforts by the vocational education community to respond, vocational special needs professionals have been far more committed to implementing new programs and curricula than to documenting and seriously evaluating the effects of billions of dollars of investment over the past two decades. There exists but a handful of well-documented studies that are useful in helping to direct others, allocate resources, and inform policy. Clearly, the time has come to devote significant resources to designing and documenting the effects of various program approaches and instructional interventions (for both mainstream and special vocational programs) and disseminating the results widely.

Discussion

The assessment of equity for special populations in vocational education raises a number of complex issues and dilemmas for evaluators and professionals. This section will examine three major issues that are likely to have a significant, intervening influence over the next five years on efforts to evaluate and improve equity initiatives in vocational education programs. First, the initial task of defining the dimensions and principles undergirding the equity construct is both problematic and dynamic in nature. Once defined, the concept and its implied agenda have to be examined in light of competing educational, economic, and social goals and agendas (e.g., the educational excellence movement). Last, the dynamics and politics of anticipated reforms within vocational education generally will have a profound effect upon special population students.

Defining and Operationalizing "Equity"

Despite having been a major concern and component of educational policy since the early 1960s, the concept of educational equity lacks a thorough and comprehensive analysis (Burbules, Lord; Sherman, 1982). While numerous litigations, educational philosophers, and theorists have developed principles and assumptions related to equity and equal opportunity, they have yet to be shaped into a functional theory of educational equity. The need for better educational equity theory pervades a number of federal programs including vocational education. Federal programs such as Chapter 1, Education of the Handicapped, Bilingual Education are among the other major initiatives designed to assure that youth with special educational difficulties have access to appropriate programs and essential support services.

As Coons (1980) noted, the concept of equality is somewhat benign, lacking any clear capacity to assist in determining quality or appropriateness. While the school districts of an urban city may be described as having comparable facilities, it is not their perfect equality that allows them to be judged as good or poor educational facilities. Further, Coons noted the populist political appeal of the "equality" concept:

> There is no denying equality's power to move the human heart; what it lacks is a capacity to move the head. It fails as an intelligible aspiration or value because it lacks substantive content (p. 134) (emphasis added).

Defining the framework and principles that undergird educational equity initiatives is an extremely crucial matter because of their instrumentality to the allocation of resources. The questions of fairness and appropriateness are integral to virtually every policy decision and most instructional decisions made in the field of education. In theory, these principles guide the making of decisions which are to be fair and just within the context in which resources are to be utilized.

As noted throughout this paper, in the case of special needs youth and adults, these decisions have historically focused on: (1) access—which students to admit to vocational education (i.e., to which students the resources should be made available), (2) treatment—once enrolled how special needs students can be effectively served/educated (i.e., which methods and techniques are most cost effective for the special student), and (3) outcomes—what learner outcomes are feasible and reasonable when special needs youth are served (i.e., whether society should expect these students to learn and obtain employment at the same rates and levels as nonspecial needs learners). In the 1960s and early 1970s, advocates for special needs students were mostly concerned with gaining access to vocational education programs at any level. As greater access was achieved to vocational education generally, attention in testimony leading to more recent legislation has clearly and strongly stressed concern about equity provisions related to treatment (i.e., assessment, counseling, transitional services and programs). The 1976 Vocational Education Amendments and the Perkins Act also placed significant emphasis on measures of program evaluation and outcomes for special groups in vocational education, especially for persons with handicaps.

Until applied to a situation or decision related to access, treatment, or outcomes, the terms "equality" and "equity" are highly ambiguous because they often imply fair (i.e., different and appropriate considerations for special groups or individuals) rather than equal allocations of resources. As Burbules, Lord, and Sherman have suggested, operationalizing the concept of equity involves a series of distinct considerations:

(1) Recognizing that the principles of equality (equal treatment for equals) and fairness (unequal treatment for unequals) are indeterminate until one has judged which characteristics are relevant in making an equal and fair distribution.

(2) Determining relevance is partly an empirical and partly an evaluative process in which equality and fairness are examined in a complementary fashion taking into consideration means, ends, and contexts.

(3) Assessing personal characteristics is relevant by virtue of their instrumentality toward given ends, which also must be justifiable in themselves.

(4) Identifying educationally relevant characteristics as merits or needs (i.e., advantages and disadvantages) is fundamentally essential. It is incumbent upon policymakers to determine distributions based on which needs or merits deserve to be served with the resources available (Burbules, Lord, & Sherman, 1982, p. 174).

This conception of equity views justice from a consequential perspective. That is, what are considered educationally relevant criteria depends upon the expected consequences or outcomes when different resource distributions are contemplated. Other views of equity might place more value on personal autonomy or the fairness of the decisionmaking process itself. While more justifiable from a procedural point of view, the process is still open to complex and often subjective determinations of needs, merits, desirable outcomes, and effective means at levels of decisionmaking that range from the federal government to classroom instructors and counselors. In writing about equity in vocational education, Hull (n.d.) defined equity as ". . . fair and unbiased treatment of individuals with respect to one's right, benefit, or privilege, or aid which is offered by or through vocational education" (p. 6). Evaluation of equity is often based on situation-specific considerations.

> The determination of what is fair, just, or appropriate may be entirely dependent on the factors and circumstances which comprise a single case. In one situation, equity may be achieved by treating all students equally with respect to the procedures used to achieve certain instructional goals and objectives. In another case, equity may require that a handicapped student be given an amount of assistance which clearly exceeds that which is given to nonhandicapped students in order to achieve certain instructional goals and objectives (Hull, n.d.).

While the civil rights legislation and state education policies have provided some guidance for determining educationally relevant criteria (mostly in the areas of nondiscrimination, denial of services, and educational finance), there are few if any principles to guide educational decisions in other matters. In the absence of an empirically based theory of educational equity, it will remain enormously difficult to select appropriate educational goals and effective instructional plans for individuals from any of the special populations categories. Given the diversity of state and local resource allocations for vocational education and special needs populations, one can readily envision the complexity of attempting to determine whether or not special needs populations are equitably served in vocational education. By its very nature the process is enormously complicated by human desires and qualities, the pluralistic values of American education, wide variation in resources, and operationally ambiguous, politically salient expectations.

Of the three dimensions of equity examined herein, equality of access appears to be the least encumbered with definitional problems. In much of the literature, "equality of opportunity" is regarded as a synonym for access and has come to mean generally the opportunity to participate in programs with comparable resource bases. Initially, the popular conception of access emerging from the civil rights mandates was one of "program admission" and the filling of racial or disability quotas for groups who had previously been screened out for various reasons that had become educationally irrelevant. Within fiscal constraints, states have sought to provide all of their citizens with access to educational programs and services of comparable breadth, depth, and quality. The primary instruments for generating equal access have been explicit policies for recruitment and admission and state aid distribution formulae, which included factors such as economic conditions of local communities, available tax bases, and levels of taxation for generating educational revenues. The previous VEA Amendments included a number of "within-state" distribution criteria designed to improve access to vocational education by directing funds into communities that were economically depressed and had high rates of unemployment.

Like educators in other fields, vocational educators have failed, in large measure, to develop clear and complete conceptions of equitable practices. In examining vocational education administrators' perceptions of "equity", Plihal (in press) found that nearly 80 percent of the interviewees viewed equity in vocational education simplistically as a matter of equal opportunity, with little attention given to matters of fair and just treatment or the attainment of equitable outcomes for those students who have atypical characteristics.

Equity and Excellence

The massive educational reform initiative spurred by national study commission reports and state legislatures over the past three years has been fueled largely by concerns for restoring "educational excellence" to our nation's schools. In many states, the educational reform movement has placed matters related to equity and special populations on the back burner. To what extent are these priorities complementary, concurrently attainable, or perhaps contradictory?

In examining the guiding philosophies related to equity and excellence, Strike (1985) argues that, in part, our conceptions of equity are tied to basic ideologies and dependent upon our purposes. To illustrate the relationship, he examines the concept of equity from the perspectives of human capital theory and the "Jeffersonian ideal." Equity as perceived in human capital theory, which Strike argues drives many of the current agendas for educational reform in high schools, would strive to allocate resources on the basis of criteria related to economic productivity. Further, the amount of resources devoted to the education of individuals would vary quantitatively as well as qualitatively. Larger investments could and should be made in certain individuals if the "general welfare is enhanced thereby." If one subscribes to the human capital theory, equity is likely to be viewed as fair competition for scarce resources that are allocated on the basis of rational and relevant criteria, with one of the primary criteria being the ability of individuals to profit from educational experiences.

The Jeffersonian ideal, on the other hand, has the goal of achieving the widest distribution of the political skills to provide for full and meaningful participation in the institutions of a democratic society. A universally equal distribution of these political skills would be ideal if citizens are to make informed choices and govern themselves wisely. The Jeffersonian view of equity would include three facets, according to Strike: (a) the level of education to be sought would guarantee everyone meaningful participation in the fundamental political institutions of society; (b) if society chooses to provide a level of political skills (in this case education) above the minimum, it will continue to seek as even a distribution of these skills as possible; and (c) insofar as disparities in political competence result, educational systems should attempt to distribute these disparities in such a way that groups of individuals can be formed for purposes of effective advocacy. Strike's illustration of the third point suggests that the rights of handicapped individuals (particularly mentally handicapped individuals) are better protected when handicapped individuals themselves or their parents and guardians become effective advocates. The conception of equity herein is tied to a specific criterion focusing on equality of results across individuals. Resources are allocated on the basis of need rather than the ability to profit and/or the potential to develop utilitarian value.

As Strike examines the tensions between equity and excellence as educational goals, he concludes that each has fundamentally different properties that prohibit them from being simultaneously realized. The concepts of equity and excellence take on divergent meaning when viewed from the perspective of human capital theory or the Jeffersonian ideal. Clearly, the Perkins legislation presents in the same Act two major missions that are fundamentally different in character and viewed by some as incompatible. In name, the program improvement section of the Act is intended to drive efforts to assure the "excellence of vocational education". Indeed, the entire vocational movement has been based on the fundamental tenets of the human capital theory (i.e., social efficiency, maximizing worker productivity, and accelerating or sustaining economic growth). Conversely, the equity provisions are founded on a history of federal policy emphasizing the Jeffersonian ideals of equal opportunity, appropriate treatment, and the expectation that individually appropriate treatment will lead toward equality of outcomes. While utilitarian value is viewed as a desirable and important outcome, it has never been seen as a driving force in the equity mission.

The potential incompatibility between the equity and excellence missions of vocational education is particularly perplexing when, for example, applied to considerations of normative and criterion-referenced assessment. As special population groups have moved closer to achieving the criterion of balanced enrollments in different vocational programs, policy concerns have shifted increasingly toward the more subjective and individualistic criteria of equitable and appropriate treatment. If, as Hull suggests, equity is to be measured in the context of situations and individuals, what criterion or norm-referenced indicators should guide decisions for planning, resource allocation, and evaluation? Should special needs students be expected to achieve the new, higher standards for graduation posed by state and local boards of education? If one argued that educational achievement should be guided by the selection of appropriate goals for the student's IEP, are the expectations for IEP goals going to be subtly affected by the general public's concern for improved educational performance? For society as a whole and for the students involved, the standards lose considerable value if they are set so high that they are not universally attainable by the vast majority of youth, including those youth with significant special needs.

The Politics and Dynamics of Reform in Vocational Education

Since the introduction of the excellence in education movement which followed the 1983 publication of A Nation at Risk, the debate surrounding the role and purpose of vocational education within the nation's educational system has intensified. Many of the preliminary major reform reports chose not to address vocational education explicitly (e.g., National Commission on Excellence in Education, Task Force on Education for Economic Growth, 1983; National Science Board Commission on Precollege Education in Mathematics, Science, and Technology, 1983), while other reports failed to include any form of vocational education or career development study in their proposals for core curriculum at the secondary or high school level (e.g., Adler, 1982). A more recent report from the Committee for Economic Development (1985), entitled Investing in Our Children, explicitly condemned contemporary vocational education:

> Unfortunately, whether measured by future earnings, job placement, or employment success, there is today little evidence that vocational education is either meeting the needs of students or of the employers who are expected to hire them. Moreover, vocational education too often perpetuates sex role stereotyping and tracking of minorities into inferior programs (p. 30).

All of the reports call for far less diversity and greater commonality in the secondary school curriculum, less specialized education and more common, liberal education.

Predictably, the past two years have seen the issuance of numerous proposals for bringing major reforms to secondary education generally and vocational education specifically. In 1984, the National Center for Research in Vocational Education (NCRVE) assembled a National Commission on Vocational Education in the Secondary School. Their report, entitled The Unfinished Agenda, portrayed the diversity and eclectic nature of vocational education, and urged the integration of academic and vocational instruction throughout secondary schools. Other recent studies and reports on vocational education have suggested varying levels of reconceptualization. The Committee for Economic Development (1985) noted that, if vocational education is to remain a viable part of secondary schooling, it needs a new focus and substantial improvement—placing more emphasis on academic skills achievement as a preprequisite for entering occupationally specific training, addressing labor market needs more directly, and working closely with business in the development and conduct of programs. Following an extensive investigation of the purposes of secondary vocational education, Copa et al. (1985) argued that vocational education must contribute to the overall purposes of the secondary school (emphasizing the use of skills and knowledge from other curriculum areas, helping students to develop reasoning skills), as well as to a set of unique goals for vocational education (improving career exploration and planning, increasing occupational opportunities, and nurturing pride in and enjoyment of work). Following an extensive analysis of vocational education in California, Stern, Hoachlander, Choy, and Benson (1985) recommended that the programs be reconstituted to: combine production with educational experiences (e.g., school-based enterprises), include all students, teach teamwork, integrate academic and vocational education, and encourage active inquiry.

Perhaps the most dramatic reform proposal was offered by Oakes (1986), in which she urged the adoption of a new curricular framework (with corollary modifications in instruction and organization) and the adoption of "technology and economic sciences" (or literacy) as a new name to bridge the dichotomy between vocational and academic education. These proposals for redirecting vocational education are a sample of the major recommendations and undoubtedly more will appear in the next couple of years. Each of these new visions of vocational education contains major implications for the capacity of the field to serve special needs students, which, unfortunately, have not been explored to date.

Further, it should be noted that the reform reports and the agendas that have emerged are fragmented in their focus. A major missing element appears to be analyses of current practice in postsecondary and adult vocational education. While several major reports have been issued on reform in higher education (e.g., Study Group on the Conditions of Excellence in American Higher Education, 1984), they do not discuss two-year technical institutes and occupational education programs in community colleges. As the mean age of the U.S. population continues to rise, high school enrollments decline, and adult worker retraining needs intensify from the impact of technology and economic competition in the workplace, occupationally specific training will be found in increasing quantity at the postsecondary level. Despite the critical role that these institutions will play in providing the majority of public vocational education (based on enrollment FTE and expenditures), the future of vocational education programs in these institutions has received scant attention.

Also missing from the reports and reform analyses have been integral discussions and consideration of special populations. As noted earlier, the pervasive, driving force in the current educational reform movement has been the view that schools must be strengthened in terms of their capacity to develop human capital and thereby to increase the nation's economic productivity. Most of the reports include at least a passing mention of matters pertaining to equity. However, many of the recommendations are based on one or more of three fallacious presumptions: that the capacity of education to address educational and economic difficulties has been reached, that all of the nation's youth are served equitably (albeit perhaps poorly), or that too much attention and too many resources have been committed to this priority in the past two decades and other students have been seriously neglected. Despite the civil rights agenda of the 1960s and 1970s, the following conditions prevail: approximately 700,000 students leave school without a diploma each year, another 300,000 students are chronic truants, and dropout and unemployment rates for Blacks and Hispanic youth exceed 40 percent in major metropolitan areas. As the Coalition of Advocates for Students (1985) and the Business Advisory Commission (1985) of the Education Commission of the States each noted, the shrinking population of youth is beset with several monumental problems that will continue to demand attention and resources from vocational education, as well as other educational programs, social services, and the private sector. The National Governors Association and other organizations have recently launched a number of different programs with high levels of funding aimed at students who are broadly described as being "at-risk"—leading some policy observers to cite this effort as the second wave of educational reform.

Finally, given the web of federal, state, and local interests in vocational education, the politics involving the proposed changes appear enormously complex. As has historically been the case, vocational education is an educational enterprise that captures the prevailing interest of employers (large corporations and small businesses alike), unions, state legislators and other policymakers, parents, special interest groups interested in social reform, and educators at the secondary and postsecondary level. Over the past decade assessments of vocational education have indicated that the objectives and anticipated outcomes are too diverse, the federal investment too small, and the intergovermental structure for administering the program too loose to demonstrate clear benefits from the federal dollar. The extent to which special interest group politics will continue to prevail in this period of reform will undoubtedly have a major effect upon the character of the special population provisions of future legislation and policy at all levels.

Central Questions for the National Assessment

The central question for federal vocational education policy remains one of determining whether or to what extent the competing ideologies can be appropriately balanced and adequately nurtured. To what extent is it possible to achieve Jeffersonian ideals within a federal program predicated historically and largely on the notion of developing and expanding economic viability? To what extent should vocational education contribute to the agenda of economic development or the quest for maximizing individual human potential and options? Clearly, both missions have deep roots in federal policy, and the public will undoubtedly continue to demand that both ends be served. In part, the relative importance of educational equity will be addressed within the context of changing economic, social, and political conditions. While direct and simple answers to these questions are impossible, planners of the National Assessment need to remain conscious of the pervasive effects that these competing ideologies have upon the manner in which state and local vocational education programs respond to the Perkins Act provisions for serving special populations.

Questions must also focus on matters of access or equality of opportunity. With the highly diverse and changing commitments of state and local vocational education funding, to what extent do youth and adults have access to programs of comparable quality in the cities, rural settings, and communities suffering economic decline? The impact of the excellence in education movement is likely to have significant adverse effects upon the resource allocations for vocational education and other specialized curricula that are not viewed as central to a quality liberal or general education.

The operational strategies employed for providing educational equity in vocational education also deserve extensive attention in the National Assessment. To what extent have state boards for vocational education and eligible recipients been able to implement programs and services that go beyond providing access and result in individually appropriate treatments? To what extent have vocational educators adopted broadened definitions of equity that include efforts to measure equality of outcomes? What changes in the vocational education curriculum or the manner in which it is delivered would make it more accessible and more effective for different groups of special needs individuals?

Recommendations

There appear to be a number of different foci that are relevant to the National Assessment of the Perkins Act and the special populations and equity provisions contained therein. Those involved in planning and conducting the Assessment need to be cognizant not only of the specific equity provisions of the Act but the collective effects this legislation has had upon the funds, programs, and services for the full range of special populations. While Title IIA, the Vocational Opportunities Program, is perceived by many as the heart of the legislation, the interactive effects that the equity mandates have on program improvement (Title IIB), national programs, and special programs should be carefully examined as well. As suggested by the congressional mandate for the Assessment, evaluative efforts should take note of the effects of contextual factors in the private and public sector that influence the mission and impact of vocational education.

Student Access and Outcome Studies

As vocational education programs have begun to demonstrate the capacity to serve students with diverse backgrounds, the demands for enrollment of other special populations has increased. Programs continue to face demands and pressures to serve severely mentally handicapped individuals, immigrants and refugees, and hard-core and potential dropouts. As the academic demands placed on public school students increase and the retraining needs of a growing adult population intensify, vocational education programs will be stretched to address the job preparation needs of these new groups. For many, the severity of their educational needs will likely require special classes and separate programs, which will raise again the legal and constitutional appropriateness issues associated with segregated programs.

Studies have begun to emerge that describe the outcomes and post-program status of special population students who participated in vocational education. Longitudinal data sets, such as HSB, provide new opportunities and better data for examining student outcomes from several perspectives. Outcome studies for each of the different special populations specified in the Act should be conducted to determine the possible relationships of vocational program participation to labor force participation, continuity of employment, earnings, postsecondary educational pursuits, and acquisition of basic and employability skills. The extent to which outcome measures vary across and within targeted populations and states will help to re-direct federal policy as needed.

The longitudinal data bases presently available and their planned additional data collections can provide the primary means for examining access and outcome questions for high school programs. Similar studies and databases should be identified or developed to examine access and outcome questions for postsecondary and adult populations.

Funds Distribution Studies

As noted in the discussion of the framework for the Act, there are multiple approaches used to distribute funds targeted for access and equity purposes. The effectiveness of the "within-state" allocation formula should be carefully studied in concert with the other policies adopted by state boards for dispersing funds to eligible recipients. As has been noted, federal vocational education policy has been heavily focused on "means," with minimal attention to the "ends" or "outcomes" expected from the federal investment. The funds distribution policies exemplify this point of concern. In the case of the handicapped and disadvantaged set-asides, several have argued that the matching and recordkeeping requirements are so burdensome that some schools and postsecondary institutions actually choose not to participate in the program. The adequacy and effectiveness of funding mechanisms such as set-asides, special titles, direct federal assistance to local educational agencies, and matching requirements need to be examined carefully and fully in an appropriate sample of states with different special population programs and state governance structures. Further, the feasibility of alternative funding mechanisms, such as providing Vocational

Incentive Grants to special needs students, as proposed by the Committee on Vocational Education and Economic Development in Rural Areas (Sherman, 1983), might be explored in a series of simulation studies.

Program Intervention Studies

While vocational education has been seriously engaged in the business of serving special populations since 1968, the field lacks a comprehensive knowledge base of effective practices. The failure of states to take seriously the special needs program evaluation requirements in the 1976 VEA Amendments, coupled with the lack of applied research and demonstration program funds devoted to programs serving special populations, have left administrators and practitioners with little insight as to which program approaches, teaching techniques, and collaboration strategies are optimally effective with different types of special students. While the professional literature has grown significantly in the past decade, little of what is available from so-called "model" programs is based on substantive or rigorous evaluation criteria. Curriculum guides and program handbooks seldom measure the effects of the program on student acquisition of knowledge and skills, document the relevance of the program to employment situations, or use appropriate comparison groups.

Within the past five years several states have developed and standardized program models (e.g., Designated Vocational Instructor program in Wisconsin, Vocational Resource Educator program in Missouri) that are implemented statewide to serve different special groups. The design, delivery, and outcomes of these programs should be carefully studied to identify the approaches and practices that appear to be most successful in achieving certain ends. A series of carefully designed and rigorously evaluated (using both qualitative and quantitative measures) model demonstration programs funded by the federal government is also needed. If selected programs were studied with common criteria, the development of a knowledge base for comprehensive special needs programs and support services would begin to emerge. Alternative approaches for creating such a model demonstration program should be carefully studied in the National Assessment.

Context and Coordination Studies

The effectiveness of programs and services designed to increase access and equity is often dependent upon contextual influences and the adequacy of coordination efforts with other agencies and organizations. There appear to be numerous contextual influences that require attention in the near future. Understanding more fully, for instance, the demographic dimensions of the increases in the Hispanic youth population or the nature and anticipated rates of single parenthood would assist in projecting the resource allocations and programming that will be needed during the next reauthorization period. Similarly, the aging of the work force will require that community colleges and postsecondary institutions play an expanded role in vocational education in the future. It is vitally important that federal policy reflect as accurately as possible appropriate programs and resource allocations for addressing these needs as they emerge rather than retrospectively. A series of demographic studies might be commissioned to develop substantive projections and profiles of anticipated special population needs.

Particularly at the secondary level, the impact of rising graduation requirements is being felt in vocational education. A number of states and communities are closing advanced specialty courses due to low enrollments. In some states entire programs are being dropped since students no longer have available the elective periods to take vocational education courses. Increases in academic and foreign language requirements for admission to four-year colleges and universities have effectively prescribed more than 90 percent of a high school student's program prior to entering the ninth grade. The composition and character of secondary vocational education will change markedly in the next few years. In many states, the "reform" is already well under way. Obviously, the implications of reductions in the breadth and depth of vocational education offerings and support services such as career guidance are enormous for special population students. It is likely that the next reauthorization may require special initiatives and incentives for maintaining comprehensive vocational programs at the secondary level.

When viewed in the larger context of federal education, training, and employment policy, vocational education is but one of several systems involved in preparing individuals for employment. To ensure continuity in federal policy and to shape similar interagency coordination efforts at the state and local levels, the Act is replete with provisions for coordinated planning, joint review of plans, designated membership on advisory committees, and evaluations of coordinated efforts. Relative to special populations, coordinated efforts with special education, rehabilitation, and the OCR are designed to assure the protection of civil rights, as well as to integrate federal funding resources where appropriate. Each of the provisions within the Act for coordination pertaining to special population students should be carefully examined to determine which agencies provide optimally beneficial resources and assistance. The focus needs to be placed on the ultimate benefits to special population students (if they are found to exist) rather than on the bureaucratic difficulties typically associated with administering coordinated efforts.

Finally, the nature and extent of effective coordination efforts with business and industry need to be studied as well. Many of the proposals for reform in vocational education (Silberman, 1982; Boyer, 1983; Stern, Hoachlander, Choy, & Benson, 1985) call for new and expanded relationships with employers. Programs that combine production functions (e.g., running a restaurant, mass producing a product) with educational content can provide high-quality work experience (Stern, 1984). Involving local business people in helping students to develop realistic and purposeful production projects helps to bring relevance to vocational, general, and academic learning. Examining the effects of emerging business-education programs that are carefully planned and monitored for their educational purpose will be useful for vocational education students generally and for special population students in particular.

In closing, the most essential product of the National Assessment may not necessarily be the findings and reports that are produced. Of perhaps equal value will be the dialogue and debate that are generated. As members of Congress and leaders of the vocational education, general education, and employment communities carefully consider the problems and prospects of vocational education as reflected in the data and information compiled by the National Assessment, important new insights are likely to be gained that will influence the field in directions that yield improved access and equity for special populations.

References

Adler, M. J. (1982). The Paideia proposal: An educational manifesto. New York: Macmillan.

Azrin, N. H., & Philip, R. A. (1979). The Job Club method for the job handicapped: A comparative outcome study. Rehabilitation Counseling Bulletin, 23, 144-155.

Benson, C. S., & Hoachlander, E. G. (1981b). An analysis of the distribution of funds for vocational education: A survey of ten states (Contract No. 400-78-0039, Substudy B-2). Washington, DC: National Institute of Education.

Benson, C. S., & Hoachlander, E. G. (1981a). Reauthorization for the Federal Vocational Education Act: Possible directions. Journal of Educational Finance, 7(1), 14-43.

Benson, C. S., Hoachlander, E. G., & Johnson, B. L. (1980). An assessment of the reliability and consistency in reporting of vocational education data available from national information systems (Contract No. 400-78-0039, Substudy A). Washington, DC: National Institute of Education.

Benson, C. S., Hoachlander, E. G., & Polster, R. (1980). Analysis of distribution procedures used by states to distribute federal funds for vocational education (Contract No. 400-78-0039, Substudy B-1). Washington, DC: National Institute of Education.

Beuke, V. L., Lukas, C. V., Brigham, N., Glick, G. S., & Breen, J. P. (1980). Implementation of the Education Amendments of 1979: A study of state and local compliance and evaluation practices (Contract No. 400-78-0041). Washington, DC: National Institute of Education.

Boyer, E. L. (1983). High school: A report on secondary education in America. New York: Harper and Row.

Burbules, N. C., Lord, B. T., & Sherman, A. L. (1982, Summer). Equity, equal opportunity, and education. Educational Evaluation and Policy Analysis, 4(2), 169-187.

Business Advisory Commission. (1985). Reconnecting youth: The next stage of reform. Denver: Education Commission of the States.

Campbell, P. B., Basinger, K. S., Dauner, M. B., & Parks, M. A. (1986). Outcomes of vocational education for women, minorities, the handicapped, and the poor. Columbus: Ohio State University, National Center for Research in Vocational Education.

Cobb, R. B., & Kingsbury, D. E. (1985). The special needs provisions of the Perkins Act. VocEd, 60(4), 33-34.

Commission on National Aid to Vocational Education. (1914). Report of the Commission on National Aid to Vocational Education together with the hearings held on the subject. U.S. House of Representatives, 63rd Congress, 2nd Session. Washington, DC: Government Printing Office.

Committee for Economic Development. (1985). Investing in our children. New York: Author.

Coons, J. E. (1980). Can education be equal and excellent. In J. W. Guthrie (Ed.), School finance policies and practices: The 1980s - A decade of conflict. Cambridge, MA: Ballinger.

Copa, G. H., et al. (1985). Purpose of vocational education in the secondary school. St. Paul: University of Minnesota, Minnesota Research and Development Center for Vocational Education.

Datta, L. E. (1980). Interpreting data: A case study from the Career Intern Program evaluation. Evaluation Review, 4, 481-506.

David, H., & Hendrickson, G. (1981). The vocational education study: The final report (Vocational Education Study Publication No. 8). Washington, D.C.: U.S. Government Printing Office.

Federal Register, (1979, March 21). 43 (56), 17162-17175.

Flynn, R. J. (1982). Effectiveness of conventional and alternative vocational education with handicapped and disadvantaged youth: A research review. In K. P. Lynch, W. E. Kiernan, & J. A. Stark (Eds.), Prevocational and vocational education for special needs youth. Baltimore: Paul H. Brookes.

Halpern, A. S. (1978). The impact of work/study programs on the employment of the mentally retarded: Some findings from two sources. International Journal of Rehabilitation Research, 1, 167-175.

Hoachlander, E. G., Choy, S. P., & Lareau, A. P. (1985, September). From prescriptive to permissive planning: New directions for vocational education policy. Berkeley, CA: MPR Associates.

Hull, M. E. (n.d.). Equity from a special education perspective. Columbus: Ohio State University, National Center for Research in Vocational Education.

Lazerson, M., & Grubb, W. N. (Eds.). (1974). American education and vocationalism: A documentary history, 1870-1970. New York: Teachers College Press.

MacMillan, D. L., Keogh, B. K., & Jones, R. L. (1986). Special educational research on mildly handicapped learners. In M. C. Wittrock (Ed.), Handbook of research on teaching (3rd ed.). New York: Macmillan.

Mallar, C. D., Kerachsky, S. H., & Thornton, C. V. D. (1980). The short-term economic impact of the Job Corps Program. In E. W. Stormsdorfer & G. Farkas (Eds.), Evaluation Studies Review Annual (Vol. 5). Beverly Hills, CA: Sage.

Masters, L. S., & Maynard, R. A. (1980). Supported work: A demonstration of subsidized employment. in E. W. Stormsdorfer & G. Farkas (Eds.). Evaluation Studies Review Annual (Vol. 5). Beverly Hills, CA: Sage.

MPR Associates, Inc. (February 1986). High School and Beyond tabulation: Classifications of secondary vocational education courses and students (Part I). Washington, DC: U.S. Department of Education, Center for Statistics.

National Center for Research in Vocational Education. (1979). Let's find the special people: Identifying and locating special need learners. Columbus: Ohio State University, National Center for Research in Vocational Education.

National Commission on Excellence in Education. (1983). A nation at risk. Washington, D.C.: U.S. Government Printing Office.

National Commission on Secondary Vocational Education. (1984). The unfinished agenda. Columbus: Ohio State University, National Center for Research in Vocational Education.

National Science Board Commission on Precollege Education in Math, Science, and Technology. (1983). Educating Americans for the 21st century. Washington, DC: National Science Foundation.

Oakes, J. (1986, May). Beyond tinkering: Reconstructing vocational education. Vocational Education in Secondary Schools: A revision. Symposium conducted at the Minnesota Research and Development Center for Vocational Education, University of Minnesota.

Office of Adult and Vocational Education. (1984, June). Vocational education: Report by the Secretary of Education to the Congress, 1983. Washington, DC: U.S. Department of Education.

Phelps, L. A. (1984). An analysis of fiscal policy alternatives for serving special populations in vocational education. Columbus: Ohio State University, National Center for Research in Vocational Education.

Phelps, L. A. (1985). Special needs students: Redefining the challenge. *Voc.Ed.*, *60*(3), 24-26.

Phelps, L. A. (1986, April 21). *Transitional programming for special needs youth*. Paper presented at the 1985-86 Distinguished Lecture Series on Employment-Related Education and Training for Special Populations, California State University, Long Beach.

Plihal, J. (in press). *The meaning of equity in vocational education*. St. Paul: University of Minnesota, Minnesota Research and Development Center for Vocational Education.

Plihal, J., Ernst, L., & Rehm, M. (1986). *The practice of equity: Access to, treatment in, and outcomes of vocational education in the secondary school*. St. Paul: University of Minnesota, Minnesota Research and Development Center for Vocational Education.

Sherman, S. W. (Ed.). (1983). *Education for tomorrow's jobs*. Washington, D.C.: National Academy Press.

Silberman, H. F. (1982). The challenge to vocational education. In H. F. Silberman (Ed.), *Education and work* (Eighty-first yearbook of the National Society for the Study of Education, Part II). Chicago: The University of Chicago Press.

Silverstein, R. (1983, May 15). *Prepared statement, Hearings on the reauthorization of the Vocational Education Act of 1963: Part 13: Disadvantaged and Handicapped*. U.S. House of Representatives, Committee on Education and Labor.

Stern, D. (1984). School-based enterprise and the quality of work experience: A study of high school students. *Youth and Society*, *15*, 401-427.

Stern, D., Hoachlander, E. G., Choy, S., & Benson, C. (1985). *One million hours a day: Vocational education in California public secondary schools*. Berkeley: University of California, School of Education.

Strike, K. A. (1985). Is there a conflict between equity and excellence? *Educational Evaluation and Policy Analysis*, *7*(4), 409-416.

Study Group on the Conditions of Excellence in Higher Education. (1982). *Involvement in learning: Realizing the potential of American higher education*. Washington, DC: National Institute of Education.

Taggart, R. (1981). *A fisherman's guide: An assessment of training and remediation strategies*. Kalamazoo, Michigan: W.E. Upjohn Institute for Employment Research.

Task Force on Education for Economic Growth. (1983). *Action for excellence*. Denver: Education Commission of the States.

Vetter, L., Winkfield, P. W., Spain, R. K., & Kelly, M. E. (1982) *Equity and vocational education: An initial synthesis of progress and recommendations for the future*. Columbus: Ohio State University, National Center for Research in Vocational Education.

COMMENTS ON ACCESS TO QUALITY VOCATIONAL EDUCATION

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Introduction

It is interesting to note that since the institution of the California Lottery, most of the winners of the large jackpots have been newcomers to this country or those who hold monetarily less rewarding jobs. This has been used by detractors of the lottery as evidence against the lottery as an activity that thrives on the hard-earned money of the less fortunate. Yet, many who have willingly spent their money on a chance to realize their American Dream think otherwise. In the lottery, the odds are the same for everyone, including the less fortunate, the disadvantaged, teen-age parents, the displaced homemakers, the handicapped, and those who do not speak fluent English. For once, the lack of basic English literacy skills, the lack of local work experience, old age, unfamiliarity with employability skills and other basic prerequisites to employment do not affect one's chances of securing handsome economic payoffs. However, with the chances of winning a large sum of money being so remote, most realize that winning the lottery is but a dream, and that the only guarantee for a better livelihood is through work. And for most, especially those belonging to special needs groups, employment with reasonable compensation means overcoming many of the obstacles just mentioned. In order to gain access to the desired jobs, generally they must rely on the conventional educational system for the proper training—a system whose success in serving these groups has been far less than spectacular in the past. In the following, I will discuss some of the points raised by Phelps, Douglass, and Benson.

Carl Perkins Act: A Federal Vocational Shotgun?

The first point addresses the funding approach adopted by the federal government in improving access for the special needs populations in vocational education. Under the present policy and, more importantly, the allocation formula adopted by Congress, vocational education moneys are allocated to the states for special purposes. Because of the relatively large number of targets this money is supposed to serve, local education agencies (LEAs) and programs may receive only a small amount for any particular group of students that the Carl Perkins Act intended to assist. An example of this phenomenon is the San Francisco Community College, which received approximately $6,000 in 1986 from Perkins funds to improve access to vocational education for the district's over 30,000 limited English proficient (LEP) enrollees.

Both Allen Phelps and Rebecca Douglass question this "shotgun" approach, adopted as federal policy, in improving access for the special needs population. Charles Benson thinks we are attempting to do too much with too little.

It is beyond speculation that under the present funding level, local educational institutions are hard pressed to solve many of the problems confronting the special needs populations as outlined in the Carl Perkins Act. Many questions concerning the effectiveness of the funding policy must be raised. At the same time, one must also be concerned with the positive side effects the policy may have created. Namely, have the funding policy and special priorities helped focus the LEAs' attention on the special needs students? By its emphasis and allocation of funds, the federal government may have unwittingly helped begin to change the attitude of the vocational educators towards the special needs population. If indeed this has happened, quantitative results of such a trend may not be measurable for a few years. More readily available, however, are answers to some of the questions and objections raised by the three authors.

At a minimum, we would like answers about the effectiveness of the leveraging strategy that is the backbone of the policy on which funding for the special needs students rests. Related to effectiveness is the question of whether the federal policy has been able to make services available to the special needs students an integral part of the regular curriculum to which they were previously denied access. On the other hand, investigation must be made to determine whether these funds have been used merely to supplant local funds, with no clear benefit for those intended. The severe criticism of the strict policy on matching funds must be investigated. Some have criticized this policy as being too restrictive to achieve results. Finally, in programs that have been successfully implemented to improve access for the special needs students, the procedures for such transitions should be clearly documented to serve as models for others.

A Problem of Accessing the Right Stuff

Another topic that merits repetition is the notion of the lack of access to quality vocational training programs documented by Benson and echoed by Douglass in their respective papers. Special needs students, as the papers stated, are often restricted to poorly run programs or programs that do not lead to employment with reasonable compensation. Access to programs with good employment opportunities in well-compensated jobs are usually denied to them. This is a disturbing fact in light of the large and increasing number of special needs students. I will elaborate on two issues here:

that the lack of access to quality programs for the special needs students in vocational education is a reflection of the situation in general education in this country; and, that the severity of the problem is not widely recognized.

In the general education system, there is considerable evidence that special needs students are not provided with the same quality of education that is provided to other school children. For instance, if schools with predominately disadvantaged students are compared with schools with predominately white middle class students, one will most probably find the former to be staffed with inferior quality teachers, to have a higher student to teacher ratio, to have fewer college prep classes, overcrowding, poorer instructional materials, etc. (Brown & Haycock, 1984). Vocational education perpetuates this system of denial. As Professor Benson stated in his paper, programs that serve a high concentration of disadvantaged youth generally lead to lower paying jobs and a lower employment rate.

Vocational education, in its present form, is the poor cousin to general education. Not only is it not narrowing the achievement outcomes of the different student groups, it is widening the gap. With ill-defined goals and mixed missions, poor vocational programs are dumping grounds for general education. The less academically successful students are tracked into vocational education with no clear comprehension of the importance of mastering any marketable skills for the future. Disadvantaged students, because of their usually less successful academic records, often are tracked into vocational education merely because they do not fit into the general education system. The pattern of failure is repeated.

To stem this trend of too much access to poor programs and too little access to quality programs, the barriers that are in existence must be thoroughly studied. A check list, similar to one provided by Rebecca Douglass concerning barriers for women, and including the factors mentioned by Charles Benson, can be a useful starting point. More importantly, vocational educators, especially those involved with the design and implementation of programs on the local level, must clearly identify the goals of their programs. The trend cannot be reversed without a precise articulation of the place of vocational education in the present educational delivery system.

A Sample of the Special Needs Student Population

The magnitude of the challenge posed by special needs students is formidable. It should be a concern not only for those with a special interest but for all educators. Here are some alarming statistics. In California, approximately 34 percent of the students enrolled in the 9th grade in 1979 did not complete high school in 1982-83. Nationally, about one-quarter of all secondary students drop out of school each year. The dropout rate among the disadvantaged approaches 50 percent (Newsweek, Sept. 22, 1986). Forty-five percent of the Hispanics between age 20 and 24 have not completed high school. There are approximately 4 million students in California public schools; 1 million of the children in California live in families with income below the poverty level; 44 percent are ethnic minorities. In 1981, 66.1 percent of 12th graders in California public schools were white; in the same year, whites represented only 49.1 percent of the 1st graders. Of all 17-year-olds who are still in school, 13 percent are functionally illiterate. The percentage is dramatically higher for blacks and Hispanics—56 percent and 44 percent respectively (Brown & Haycock, 1984).

Turning our attention onto another group of special needs students, those that are limited English proficient (LEPs), the statistics are equally alarming. In California, the LEP population doubled between 1977 and 1983. In 1983, 11.3 percent of K-12 enrollments were certified LEPs and another 11.3 percent had primary languages other than English. Nearly one-third of all Hispanics in school in California are LEPs (Brown & Haycock, 1984). Terrell Bell, former Secretary of Education, predicted that by 1990 nearly 25 percent of all school-aged children will be LEP students (Bell, 1984). According to the same report by Brown and Haycock, the dropout rate for LEP students is four and one-half times higher than for English-speaking students. It is also found that non-English speaking workers earn only one-third that of their English speaking counterparts in the Los Angeles area and a distant one-seventh in the San Francisco Bay Area (Ong, 1985).

Implications of Size of Population

The problems of special needs students are not problems of a small minority of our total student population. Their increasing number in California and in other states means that they will be a significant proportion of our entire student population. Both vocational educators and educators in general must get serious about providing better services for them. The following two issues relating to the objectives of the Carl Perkins Act—one assumed and the second explicit—are examined against the statistics mentioned.

Labor Market Failure

One of the assumed objectives of vocational education is to provide well-trained workers for our industries. The failure of the vocational education system to produce well-trained special needs students will have a severe impact on the number of available skilled workers in the near future. Because of the shrinking white middle class population and the increasing number of those from special needs backgrounds, affirmative action notwithstanding, industries will have to look increasingly to that population for their future recruits. This problem can be most vividly illustrated with the projection made by the California State Job Training Coordinating Council. It is estimated that the supply of entry-level workers is dwindling as youth aged 14 to 18 shrink from 32 percent of the working age population in 1975 to 23 percent in 1990. These youths will provide about 3 million new workers to the California economy during this decade. In this period, California business can be expected to create roughly 2.5 million entry-level jobs (California State Job Training Coordinating Council, 1985). Factoring in retirement and other outward movement from the labor force, it is evident that businesses will have to rely heavily on the heretofore much neglected special needs populations for their labor pool.

Improving Access vs. Raising Standards

The other issue relates to the fact that under the Carl Perkins Act, Congress is attempting to achieve two major goals: (1) improving the quality of vocational education in general and (2) improving access to vocational education for the special needs populations. Some have questioned whether these two goals are compatible. In light of the magnitude and scope of the challenge presented by the special needs populations, one must come to the conclusion that the two are complementary. Improving vocational education in general and improving access to quality programs for special needs students must be conducted simultaneously. Access alone is meaningless if general vocational education is not improved. Improvement is impossible if the outcomes for large numbers of special needs students are not upgraded. We must treat the special needs students as an integral part of changes in the educational system.

Equity, Access, and Beyond

Related to the assumed goal of vocational education mentioned above are Allen Phelps' questions on the issues of equity and access, and the philosophical underpinning of the present federal policy towards vocational education. He suggests that the present federal policy is driven simultaneously by the Jeffersonian ideal and the human capital theory, two complementary philosophies.

The challenge of the special needs students confronting educators today in vocational education and education in general has led me to believe that we have moved beyond this stage. Vocational educators are faced with a new and additional goal besides the two identified by Phelps. Educators are tackling a much more practical problem: instead of merely trying to make better citizens or provide better trained workers for the country, one is also burdened with the tasks of trying to prevent a large number of our youths from entering into criminal activities by not equipping them with employable skills.

Short-Term Solution

While some of the problems educators face today require long-term planning and coordinated efforts of the entire educational system, some short-term programs that can be put into effect more immediately can be beneficial. These programs will have the narrow focus of trying to reduce the large number of unemployed youths, especially the disadvantaged, handicapped and LEP students. Upgrading the general level of vocational education, eliminating the barriers to equal access, and eliminating tracking of special needs students should have general positive effects on the employment outcomes of these students in the long term. Because of the special difficulties faced by the inner city youths such as severe poverty, relatively short-term prosperity in the underground economy, etc., short-term, employment-oriented programs to help these youths with immediate employment can produce useful results. Such programs, funded by VEA, can be implemented in special inner city locations. Staffing should be by voluntary assignment only, with special emphasis placed on abilities in working with the target population. An intensive basic education curriculum should be augmented by job search skills, work maturity skills, and skills training that will allow them to gain entry into any paying position. These programs, offered only to seniors or dropouts aged 17 or older who are truly motivated to get a job, should attempt to capitalize on the maturity of the students and their realization of the need to be financially responsible as they develop into adults.

Bilingual Vocational Training

Another training program funded under the Carl Perkins Act that has been mentioned is the Bilingual Vocational Training (BVT) program. The 1984 Act singled out bilingual vocational training for older adolescents and young adults as a national priority, setting aside $3.7 million in FY 1985 and additional funds in FY 1986-89 for this population, estimated to be 28 million in 1985 (Crandall, 1985). The National Clearinghouse for Bilingual Education projects that the non-English language background populations will increase 31.7 percent across all ages, with a 41.7 percent increase for those of age 25 and above during those years.

Presently, the program conducts four major types of activities: (1) direct training and placement of the LEP population; (2) teacher training programs; (3) curriculum preparation and compilation; and (4) special projects, such as state networking that will encourage the creation of vocational training programs with other sources of funds targeted for the LEP population.

The biggest success of the program has been the direct training and placement initiatives funded by the BVT money. With the support of the BVT funds, many of the small number of training programs have won national recognition for their innovativeness and outstanding program outcomes. However, following the trend Benson observed, none of the successful programs is operated under school districts and community colleges or is affiliated with other institutions of substantial size or resources. In fact, most of these programs are operated by community-based organizations that have been recognized officially as legitimate receivers of federal vocational training money for the first time under the Carl Perkins Act.

With all of its success, the bilingual vocational program is faced with some lingering challenges. It is the intent of those in charge to convince the LEAs to replicate the successful strategies and practices found in BVT in their school-based training programs. On the other hand, incentive is needed to entice the LEAs to focus on the increasing bilingual population by implementing effective vocational programs for these students on a much larger scale. However, because of a lack in alternative local resources, the limited BVT funds are needed to keep the existing programs going. Many of the successful programs will probably be forced to close if federal funding is discontinued.

Conclusion

As a word of caution, I would like to remind everyone that the special needs population is a heterogeneous group. Each of the subgroups has a special set of problems that require special attention and treatment. Complicated as they are, these problems represent the diverse nature of our society. Policies adopted must reflect this reality. Because of the size of the groups and lack of general knowledge on certain groups, national data sets that researchers and practitioners will be using to formulate policy recommendations must be critically scrutinized. For example, the High School and Beyond (HSB) data, which are a useful source, do not track students in the transition years from junior to senior high school, when most dropouts occur. Further, the statistics available on Asian students from HSB are also not reliable because of undersampling.

Improving access for the special needs students is a complex task, as is pointed out by Phelps. Fortunately, with existing data and research, some of the more important issues have been clearly identified. Douglass has articulated the concerns for women and the problems they face in access to vocational education. Benson has conclusively pinpointed the main problem of access as one of too much of the wrong kind of vocational education and not enough of the other. The findings of the coming round of vocational educational research will shed new light on these problems. New federal policies must address the long-term needs as well as the short-term problems. So, while we wait for the ocean to warm over the long haul, a few silver bullets and perhaps even a golden arrow or two from the old quiver may be needed to fill the gaps.

References

Bell, T. H. (1984, March). Speech delivered at the annual convention of Teachers of English to Speakers of Other Languages, Houston, TX.

Brown, P. R., & Haycock, K. (1984). *Excellence for whom*? (A report from the Planning Committee for the Achievement Council). Oakland, CA.

California State Job Training Coordinating Council. (1985, November). *Tomorrow's workers at risk: Combatting labor market failure among California's youth*. Sacramento, CA: Author.

Crandall, J. A. (1985). *Directions in vocational education for limited English-proficient students and adults* (Occasional Paper No. 109). Columbus, OH: Ohio State University, National Center for Research in Vocational Education.

Ong, P. (1985, May). *English literacy demands and economic effects*. Paper presented at the annual Conference of the National Association for Asian and Pacific American Education, New York.

III. VOCATIONAL EDUCATION AND ECONOMIC DEVELOPMENT

Vocational Education Policy and Economic Development: Balancing Short-Term and Long-Term Needs

Patricia M. Flynn

Assessing the Impact of the Carl D. Perkins Vocational Education Act: Economic Development Issues

David W. Stevens

Comments on Vocational Education and Economic Development

Gloria A. Ruth

VOCATIONAL EDUCATION POLICY AND ECONOMIC DEVELOPMENT: BALANCING SHORT-TERM AND LONG-TERM NEEDS

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Introduction

The Carl D. Perkins Vocational Education Act of 1984 challenges the vocational education system to assume a greater role than in the past in promoting state and local economic development. Vocational educators are encouraged to design programs, for example, to encourage the entry of new businesses and industries into an area, to prepare workers for new and emerging technologies, to assist in the revitalization of established businesses and industries, and to facilitate the reemployment of workers displaced by technological change or industrial relocation. The focus of the Act on the funding of new and expanding programs, rather than on the maintenance of established programs, further accentuates the trend toward making vocational education more sensitive to changing labor market needs.

This paper discusses the economic development challenge to vocational education put forth in the Perkins Act. A brief overview of the dynamic processes of technological change and industrial development, and their implications for jobs and training, follows. Thereafter, the paper demonstrates the importance of integrating an understanding of production life cycles and structural change into vocational education policy. The need for vocational education policy to be sensitive to distinctions between short-term and long-term issues of economic development is stressed. Four specific topics—future skill surpluses, customized training, jobs in branch plants versus indigenous new firms, and serving new skills requirements at the expense of the old—are used as illustrative examples of the "need for balance" in vocational education policy.

Production Life Cycles and Local Economic Development

Production Cycles

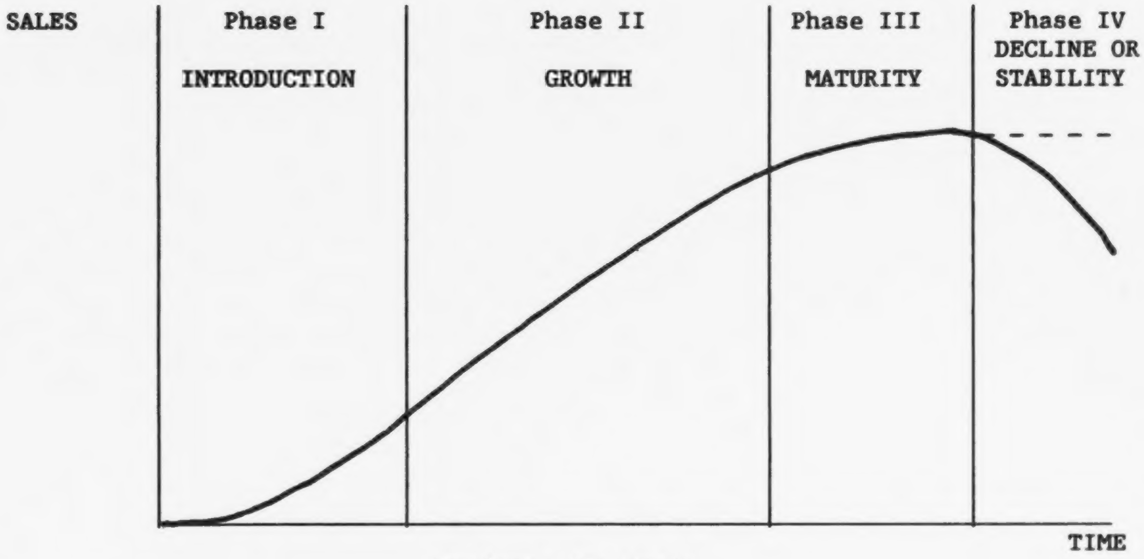
Recent debates over industrial policy and high technology focus attention on the process of industrial birth, spurts of growth, maturation, and decline (Abernathy, Clark, & Kantrow, 1983; Bluestone & Harrison, 1982; Hekman, 1980a, 1980b; Mensch, 1979). The concept that industries pass through a series of stages during their development, however, dates back to the 1930s, when industries were found to undergo a sequence of stages—experimentation, rapid growth, diminished growth, and stability or decline—during their industrial "life" (Kuznets, 1930; Burns, 1934; Alderfer & Michl, 1957). More recently, separate "life cycles" have been delineated for products, for production processes, and for technologies (Levitt, 1965; Vernon, 1966, 1970; Hirsch, 1967, 1972; Wasson, 1978; Norton and Rees, 1979; Utterback and Abernathy, 1975; Hayes & Wheelwright, 1979a, 1979b; Ford & Ryan, 1981).

Through their impacts on skill requirements and on the level of employment, production life cycles can significantly influence economic development in an area. Demands for various skills change as products and production techniques become more standardized over the course of technological development. During the experimentation phase, for instance, engineers and scientists are needed to develop new technologies, construct pilot models, and implement design changes. These professionals perform most of the tasks later assumed by production and marketing managers, technicians, and skilled crafts workers. In addition, the relatively short production runs and general purpose equipment that characterize the earlier stages of product development require skilled set-up and maintenance workers. Subsequently, the diffusion of technology and large-scale production permit more routinized tasks requiring less-skilled workers who monitor and control the equipment. Product assembly can be done by lower-skilled and unskilled workers who concentrate on a very limited number of specific tasks (Abernathy, 1978; Abernathy & Utterback, 1981; Abernathy, Clark & Kantrow, 1983; Hekman, 1980a, 1980b; Hirsch, 1967; Alderfer & Michl, 1957; Hoover, 1948). Skills, once embodied in the work force, are transferred to the production equipment (see Figure 1).

Spatial patterns of employment also change as technologies and products mature. Initially production takes place in close proximity to research and development (R & D) as engineers and scientists experiment with product and process design. At later stages of development more stable production techniques and standardized equipment permit the separation of R & D from assembly. Manufacturing activities can be transferred to lower-cost regions and countries, as technologies and products mature and competitive advantage increasingly becomes a function of unit production costs (Norton & Rees, 1979; Tilton, 1971; Wells, 1972; Stobaugh, 1972; Vernon, 1970; Houthakker & Magee, 1969).

As factor availability and relative costs differ among geographic areas, the effects of production life cycles are expected to differ considerably among regions and local economies (Markusen, 1985; Malecki, 1983, forthcoming; Thwaites & Oakley, 1985; Office of Technology Assessment, 1984; Norton & Rees, 1979). Moreover, the attractiveness of particular geographic areas to various firms and industries will alter as skills and costs change in relative importance over the course of product development. The net result is an ongoing, dynamic process of economic development, and one in which skill requirements and training needs differ across local labor markets.

Figure 1



Product Life Cycle

Process	Job Shop; Batch Production	Short Production Runs	<—>	Automated Mass Production	Mass Production	Mass Production
Equipment	General Purpose	General Purpose	<—>	Specialized	Specialized	Specialized
Dominant Labor Input	Highly Skilled Scientists and Engineers	Engineers and Technicians	<—>	Technicians and Semi-Skilled	Semi-Skilled and Low-Skilled	Semi-Skilled and Low-Skilled
Job Skills	Firm Specific	Firm Specific	<—>	More General	General	General
Skill Training	Acquired at the Work Place	Shifts to the Schools			Shifts within the school network	Varied Training sites; focus on replacement needs and retraining

Source: Patricia M. Flynn. (1986). Technological Change, the Training Cycle and Economic Development. In John Rees (Ed.), Technology, Regions and Policy, pp. 284-285. Totowa, NJ: Rowman and Littlefield. Reprinted by permission of Rowman and Littlefield Publishers.

Training Cycles in Occupational Preparation

Technological change and the evolving nature of demands for occupational skills influence how and where these skills are provided. On-the-job training and other workplace training programs are relied upon to produce the skills required by the introduction of new technologies. The scientific and engineering staff initially teach others what needs to be done for production in small batch jobs. In addition, the skills necessary to operate equipment that has been custom-designed for a specific company must also be acquired at the worksite. The manufacturer of the equipment often provides this training.

When a technology becomes more widely adopted and equipment standardized, skills that were once "firm-specific" become general skills that are transferable among employers.[1] As employers cannot capture the return on investments in general skills, they prefer to shift the general training out of the factory and into the schools, where it will be paid for by the government or by individual students. Moreover, as demand for such skills increases, it is easier to formalize the training and provide it in the schools. Together these two forces encourage a training cycle in occupational preparation as skill development shifts from the workplace into the formal educational system (Flynn, 1986). (See Figure 1) Keypunching, word processing training, and the set-up and operation of various numerical control equipment are classic examples of this transfer.

If demands continue to grow, training becomes diffused among a wide range of educational institutions. Finally, as the industry declines and demands for these skills contract, training focuses on meeting the replacement needs of firms and on retraining workers for employment in other fields. Training may be spread in haphazard ways among various educational institutions as training pressures gradually diminish.

Vocational Education Policies and Structural Change

Vocational education can facilitate structural change and local economic development by adapting to the diverse and evolving skill needs of an area. Vocational education can, for instance, facilitate the transfer of new skill needs from the workplace to the schools. Vocational education programs also can retrain workers whose jobs are threatened by technologically induced skill obsolescence. While the range of program possibilities is extensive, the overall vocational education package in an area should be designed to evolve with production life cycles, recognizing innovations and developments in technologies and products as signals to future skill needs.

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[1] For a detailed analysis of specific versus general skills, see Becker, 1964.

Training for High Technology

The expanded focus of vocational education in training for high technology and for new and emerging fields demonstrates the need to understand and incorporate the dynamic nature of technological change and economic development into vocational education policies.

Part E of the Perkins Act is devoted to training for high technology occupations. In addition, career guidance and counseling grants are authorized to assist individuals "develop new skills to move away from declining occupational fields and enter new and emerging fields in high technology areas" (Section 332(a)(4)).

"High technology" means many things to many people. However, while debate continues over what constitutes the high technology sector, and over the quantity and quality of jobs that it can deliver, local communities, states, and nations are actively seeking to attract "high tech" employment.[2]

As generally defined, high technology employment includes a list of industries said to be operating at the "cutting edge" of new technologies—industries usually identified by their relatively high proportions of R & D expenditures and of professional and technical workers. Most high technology definitions include, at a minimum, the following industries: drugs, office and computing machines, communications equipment, electronics components and accessories, engineering and scientific instruments, measuring and controlling devices, optical instruments and lenses, medical instruments and supplies, and photographic equipment and supplies. Depending on the definition used, the proportion of jobs for which high technology industries account in the United States is relatively small—ranging from under two percent to approximately 13 percent (Vinson & Harrington, 1979; Munzer & Doody, 1981; Browne, 1983; Karmin, 1984; Riche, Hecker & Burgan, 1983; Office of Technology Assessment, 1984).

Empirical evidence on high technology industries shows that they are characterized by a wide range of products, occupations, skill requirements, rates of growth and decline, firm sizes, and ownership arrangements (Harris, forthcoming; Doeringer & Flynn, 1982). For instance, high technology industries—by definition—have relatively large proportions of their employment in highly skilled professional and technical jobs compared to other types of industries. Blue collar and clerical jobs, however, continue to account for the majority of the employment in these newer industries. There also is considerable diversity among high technology industries and occupations with respect to wage levels (Doeringer & Flynn, 1982; Browne, 1983; Levin & Rumberger, 1983; Flynn, 1984a; Karmin, 1984; Attewell & Rule, 1984). In addition, while most employment in high technology industries is in large establishments, small firms are cited as a vital source of product innovation and new job generation in high technology fields (Oakley, 1984; Birch, 1981).

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[2] For a review of state initiatives to attract high technology employers, see Office of Technology Assessment, 1983.

From the perspective of production life cycles, the concept of a high technology _industry_ is misleading (Flynn, 1984a). High technology is a dynamic and relative concept that describes the early phase of industrial development. Industries, or components thereof, pass through high tech phases—characterized by rapid technological change, a relatively high degree of R & D expenditures, and a dependence on highly skilled workers. While the textile industry is often referred to as mature or traditional, it represented a high tech industry a hundred years ago. Similarly, industries considered high tech today, such as computers, powdered metals, biotechnology, or information processing, may or may not be the high tech industries of tomorrow.

Viewed in this light, high technology includes employment in R & D and innovation activities; it does not encompass jobs involved with relatively standardized production processes. The training needs of the high technology _activities_—a subset of those required in high technology industries—focuses on preparing workers for new and emerging skills.

Training for New and Emerging Skills

The Perkins Act promotes training for emerging skills and occupations. For instance, vocational education is encouraged to develop programs that stress "new and emerging technologies" (Section 251(a)(5)); to train workers in "new and expanding industries" (Section 321(c)(ii)); and to help meet the needs of "employers who require assistance in training individuals for new employment opportunities or in retraining employees in new skills required by changes in technology, products or processes" (Section 322(b)(1)(A)(v)).

Monitoring growth and decline over the course of industrial development can be difficult. Anticipating new and emerging skill requirements is especially troublesome, as past employment trends and traditional forecasting techniques are not helpful in identifying these labor market needs. The employment projections frequently used to guide vocational education curricular change and program development generally are extrapolations of past employment trends (Stevens, 1976; Goldstein, 1983; Freeman & Hansen, 1983). As such, they are best able to indicate growth and replacement needs in more traditional industries with relatively stable products and technologies. They are least effective in anticipating "turning points" in employment, training gaps in areas of emerging skill needs, or sudden spurts in employment growth.

Emerging technologies and the introduction of new types of complex equipment generate new tasks that require relatively high skill levels (Attewell & Rule, 1984; Adler, 1983; Flynn, 1985, forthcoming). The quantity and quality of skills required by these new tasks are difficult to ascertain. The duration of these skill needs is also unclear. On-the-job training and more formalized employer training programs are critical for the determination and acquisition of skills required for "emerging occupations." Working in an environment of considerable uncertainty and relatively high risk, scientists and engineers determine new skill requirements at the workplace on a trial and error basis. Moreover, in this early phase of development, there is often a bias towards higher skills than would be required after initial product development. As indicated above, standardization and mass production associated with later stages of development permit lesser-skilled workers to perform tasks previously conducted by highly skilled professional and technical workers.

Schools cannot hope to prepare workers for emerging skill needs as they initially arise at the workplace. However, as a technology develops and as demands for new skills expand, skills become more generalized and transferable among employers. Training can then be formalized and should be transferred to the educational institutions. This skill transfer process requires close, continuing collaboration between schools and employers. Student cooperative education programs in which employers provide students with skill training on up-to-date equipment, and advisory committees with active involvement of local employers likely to be hiring these graduates are examples of ways in which to enhance employer-school interaction.

Small-scale, experimental programs facilitate the transfer of new and emerging skills training to the schools. For such programs, rental equipment is preferable to large capital outlays that may hinder future flexibility and prohibit investments in new, improved, less expensive, and standardized models of equipment. The federal government is a likely candidate to sponsor these experimental programs in that it can coordinate the programs nationwide, minimize duplication, and provide for widespread dissemination of the results. Should federal assistance not be forthcoming, states concerned with training for new and emerging skills need to take the initiative in funding experimental programs or in developing mechanisms that encourage a flow of private sector funds for this purpose.

Statewide proposal competitions, as opposed to the distribution of such monies by formula, coupled with strong monitoring and evaluation, can best provide "venture capital" for experimentation.

Planning for Skill Obsolescence

Vocational education is encouraged to provide a wide range of adult training, retraining, and skill-upgrading programs for workers whose jobs or skills have been simplified or eliminated by technological change. The Perkins Act, for example, promotes the provision of skills for "workers who are unemployed or threatened with unemployment as a result of technological change or industrial dislocation (Section 251(a)(6)), assistance to employees "who require retraining to retain their jobs, or who need training to upgrade their skills..."(Section 322(b)(1)(A)(iii)), and help to employers "to assist their existing work force to adjust to changes in technology or work requirements" (322(b)(1)(C)(i)).

Vocational education, in particular, can play a vital role in retraining the employed as these types of programs are often barred by the low-income eligibility requirements imposed on many trainees under the Job Training Partnership Act (JTPA).

Production life cycles suggest that a variety of skills are prone to obsolescence over the course of industrial development as increasing standardization permits a greater division of labor and the subdivision of multifaceted tasks into more narrowly defined assignments. This simplification of tasks, or "deskilling", reduces the level of skill required by the worker to perform the tasks, and diminishes the worker's need for experience, decisionmaking, and judgment (Bright, 1958; Kraft, 1977; Greenbaum, 1979; Braverman, 1974; Flynn, 1985).

Empirical evidence shows that tasks at all levels of the skill spectrum, including professional and technical, craft, maintenance, clerical, and operative, are shown to be vulnerable to the deskilling process and to technology-induced obsolescence (Flynn, forthcoming). When mass production techniques replace small-batch production, the craft work of machinists, welders, grinders, cutters, woodworkers, blacksmiths, and the like are prone to deskilling. Relatively high-skilled tasks involving the manual handling of materials in continuous manufacturing processes can become redundant with the automation of those functions. In addition, the introduction of computerized control devices simplifies highly skilled operative tasks as they become oriented more toward monitoring and control rather than direct operation of the machinery. Low-skilled and unskilled clerical and production work, such as tedious and repetitious operative tasks or manual lifting and handling, are often completely absorbed in the adoption of relatively sophisticated equipment.

The deskilling of tasks need not result in the downgrading or layoff of workers. In fact, deskilling can result in the upgrading or promotion of workers who have been performing even lesser-skilled functions. The net result depends on the ways in which tasks are allotted in job classifications and on how assignments are allocated among workers.

Employer hiring and staffing practices play a key role in how jobs and workers are affected by technological changes. Vocational education can and should assist, however, in minimizing the negative effects of technological change. Vocational education can provide a local skill retraining capacity for adults, which, given structural change and the likelihood of worker dislocation, is needed even during prosperous periods. Training and skill-updating programs should be available at all skill levels and should be scheduled to complement work schedules.

Training for More Traditional Businesses and Industries

The Perkins Act also addresses—although often indirectly—the needs of traditional businesses and industries. Vocational programs are encouraged, for instance, that train workers "in skilled occupations needed to revitalize businesses and industries" (Section 251(a)(4)). More generally, as they seek to promote productivity and as they experience technological change and new skill needs at the workplace, employers in traditional fields can benefit via a wide range of skill-enhancing programs encouraged by the Act.

The organizational structure and employment needs of industries that have passed beyond the initial stage of development vary widely (Porter, 1980; Chandler, 1977; Alderfer & Michl, 1957; Doeringer & Terkla, forthcoming). Standardization and increasing volume encourage large firms to take advantage of economies of scale. In some industries, however, a segment of production often remains in small-batch jobs. For instance, firms that produce custom-designed goods, such as machine shops, metal fabricators, and wood working shops, often are found in mature industries populated by small and medium-sized firms. An ongoing supply of skilled workers for replacement needs is often critical for these employers to stay competitive. In addition, innovation and the introduction of new technologies and equipment in traditional industries generate new skill requirements that must be met for the efficient incorporation of these adoptions at the workplace.

Training programs to meet both the skilled replacement needs and the growth needs of employers in the traditional industries can help them survive and prosper. In these industries, the small and medium-sized firms, in particular, with relatively limited human resource development capabilities and short internal job ladders, often are least able to help themselves in meeting their skill needs. Large employers are often able to offer higher wages and greater promotion opportunities than are smaller companies. In addition, larger employers often prefer to hire experienced workers which they may pirate from smaller firms. Thus, small firms may have a double burden of needing to train both for new jobs and to replace workers lost to larger firms.

Vocational education programs are generally geared more to the needs of the larger employers that constitute the bulk of the labor market demands, than to the needs of smaller firms. While more dependent on external sources of skill training, small businesses often encounter difficulties in dealing with these providers of skills, for whom it is usually easier to maintain a relationship with one large employer than with several relatively small employers. Vocational educators should be encouraged to select representatives of the small business community to serve on advisory committees. These educators also should work with consortia of small firms to see how vocational education can facilitate their skill training problems.

The Need for Balance in Training for Local Economic Development

As they seek to meet the needs of changing labor markets, vocational educators must guard against being so "labor market responsive" as to undermine longer-term development of workers and of the local economy. A sensitivity to distinctions between short-run and long-run labor market conditions is essential in planning and evaluating vocational education programs. This is particularly important in light of evidence from case studies of economic revitalization that suggests that effective development strategies are likely to take years—possibly more than a decade—before "success" is achieved (Segal Quince Wickstead, 1985; Flynn, 1984b; Oakey, 1984).

This section addresses four specific topics—future skill surpluses, customized training, jobs in branch plants versus indigenous new firms, and serving new skills at the expense of the old—that highlight the importance of making these critical distinctions between short-term and long-term economic development.

Generating Future Skill Surpluses

As vocational education becomes more attuned to meeting the new and emerging needs of employers, it does so at the risk of generating surpluses of trained workers in certain fields. Under the immediate pressure of unfilled jobs, it is tempting to implement quick and ambitious programs to expand the supply of trained workers, rather than relying on employers to solve some of their immediate staffing difficulties through changes in recruitment and internal training practices. Because the permanence of emerging skill needs is particularly hard to predict, moving quickly in response to employer pressure can lead to later skill mismatches.

There are recent indications that many vocational educational institutions have jumped on the "high tech bandwagon" and may soon find themselves contributing to various skill surpluses in occupations such as computer programming and electronics technicians (Grubb, 1984). Ample evidence elsewhere suggests caution against rapid installment of programs to build up skill supplies unless the shortage is large and continued demand can be demonstrated (Freeman, 1971; Freeman & Hansen, 1983; Fogel & Mitchell, 1974; Doeringer, Flynn & Tandon, 1981).

The Perkins Act advocates programs for meeting skilled labor shortages in high technology fields (Section 341(a)(1)). Vocational education needs to be sensitive to balancing short-term considerations against longer-term skill prospects as it responds to this challenge. Vocational education policies need to address not only the existence of skill shortages but also such issues as how fast scarcities can be met and at what risk of eventually stimulating surpluses.

Customized Training

The Perkins Act promotes industry-education partnerships in curricular and program design. More generally, the Act encourages programs "especially tailored to the needs of an industry or group of industries for skilled workers" (Section 322(b)(1)(C)(i)) and for "quick-start customized training for workers in new and expanding industries or for workers for placement in jobs that are difficult to fill because of a shortage of workers with the requisite skills" (Section 322(c)(ii)).

Many states and regions are seeking to attract employers and industries—particularly in high technology fields—by promising "tailor made" or custom-designed work forces to accommodate individual employer needs (Office of Technology Assessment, 1983). Programs tailored to provide employers with workers that meet relatively specific production needs, however, tend to reduce worker flexibility in the labor market. Vocational education should focus on providing skills that are transferable among different workplaces, guarding against providing training that is extremely narrow in scope or designed for any one employer's specific needs. Because young workers are likely to embark upon more than one career path in their work life, programs for youth, particularly at the secondary level, need to be broad enough to enable them to work in a variety of situations and to adjust to structural change over the course of industrial development.

Branch Plants versus Indigenous New Firms

The goal of promoting "the entry of new businesses and industries into a state or community" also suggests the need to differentiate between short-term and longer-term economic development strategies. Research indicates, for instance, that there are distinct differences between the contributions to local economic development of branch plants of established firms and those of "home grown," new firms (Krumme & Hayter, 1975; Thomas, 1980; Harris, forthcoming; Bergman & Goldstein, forthcoming; Malecki, forthcoming; Office of Technology Assessment, 1984). In particular, branch plants are likely to provide a larger number of jobs, at least in the short run, than are new firms and, hence, appear immediately successful. However, jobs at branch plants are more apt to involve relatively standardized production activities as compared to those at newly created firms indigenous to the area. Jobs at branch plants generally are more vulnerable than those at "home grown" new firms to dispersion to lower-cost locations outside of the area as product demand or competition intensifies. Moreover, given their mix of production activities and occupations, branch plants are less likely than indigenous new firms to act as a "seedbed" or "growth pole" in stimulating new spinoff firms and future employment opportunities in the area (Rees, 1986; Rees & Stafford, 1984; Thomas, 1975, 1985; Malecki, 1983).

Ownership arrangements of firms raise a further issue of local control—accentuated by recent trends toward greater globalization of industries and the increasing importance of multinational corporations in world trade (Vernon, 1979; Harris, forthcoming; Porter, 1980). Firms producing multiple products in multiple locations are able to shift resources among product lines and plant sites. One can expect, therefore, that local communities that are home to branch plants of established firms whose headquarters are located elsewhere will exercise relatively limited control over employment and training activities in the area. Corporate decisions that will directly affect the local community, such as those involving new product development, plant relocations, and hiring and staffing, are likely to be made elsewhere, with the overall goals of the parent corporation overriding local community needs.

A low-cost supply of labor may attract new branch plants or delay the exodus of local manufacturing jobs involving simplified production tasks. An economic development strategy designed to "capture" such jobs may provide a respite from economic decline. The results of such a strategy, however, are likely to be temporary in nature. Moreover, they may threaten longer-term growth and development in the area.

Serving the New—at the Expense of the Old?

A key change in focus of the Perkins Act from prior vocational education legislation is the emphasis on allocating resources to new and expanding programs rather than to maintenance of existing programs. The Act also encourages programs that "assist individuals to develop new skills to move away from declining occupational fields and enter new and emerging fields in high-technology areas and fields experiencing skill shortages" (Section 332(a)(4)).

The attraction of new and emerging businesses and industries can be used effectively as a development tool in economically depressed areas (Flynn, 1984c). However, high technology employment is not sufficiently large to rescue all such communities. Moreover, recent research suggests that many depressed communities may not have the wherewithal to attract venture capital funds and highly skilled workers sought by high technology employers (Oakey, 1984). Instead, the key to economic renewal for many communities may lie in a different type of "high tech" solution—the integration of high technology products into more traditional industries to help them become more competitive (Browne, 1983).

The temptation to seek out new industries and businesses may drain resources from more traditional sources of employment. Furthermore, even if new industries are successfully recruited, alternative employment can be crowded out. Labor shortages, particularly in the blue collar and clerical fields attributable to the growth of new and emerging firms, for instance, tend to spill over into other sectors less able to compete for workers (Flynn, 1984c). By focusing on these spillover problems of skill replacement needs, vocational education can help prevent an economic development strategy from backfiring as it impairs the competitiveness of established employers and prompts their "premature" departure from the area.

Vocational Planning and the Allocation of Training Responsibilities

To determine more specifically the role of vocational education in training for local economic development through preparing workers for employment in a state, educators need to answer the following questions[3]:

- How many job openings will there be in various occupations?
- What are the skill requirements of these jobs?
- Which jobs are entry-level positions for trained vocational graduates?
- Are these entry-level positions likely to afford workers opportunities for career development, or are they dead-end jobs?
- What chance will vocational education graduates have for placement when they compete with other eligible workers in the labor force?

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[3] This section draws heavily upon Flynn, 1984b.

- How many students now "in the pipeline" are receiving training for these occupations?

To answer these questions requires analysis of occupational projections, assessments of employer hiring and staffing practices, and an understanding of the roles of other suppliers of skilled workers in various occupations.

Identification of anticipated job openings is just a first step in determining education and training needs. Before translating job openings data into vocational education programs, alternative sources of labor supply need to be assessed. Might the unemployed, re-entrants to the labor market, or current employees fill those vacancies? In addition, the expected duration of skill shortages, rates of pay for projected jobs, and patterns of migration should be analyzed. By themselves, statistics on employment demand, even when compared with data on the supply of training program completions, may be misleading and suggest erroneous policy actions.

Labor shortages may, for instance, be the result of high turnover induced by low pay or otherwise poor working conditions. Alternatively, job openings may occur in occupations that are generally filled from within the firm—creating actual job openings at entry-level jobs in other skill levels. Employers frequently promote current employees in lower-level jobs to vacancies in higher-skilled positions. Career ladders within firms, that is, in internal labor markets, work to the advantage of both employers and workers: the employer is given the chance to assess the individual at work prior to the holding of the higher-skilled job (Doeringer & Piore, 1970; Osterman, 1984). Internal labor markets also provide career incentives and advancement opportunities for workers. These, in turn, enhance worker commitment to the firm and can reduce costly turnover.

Internal labor markets, however, can also "shelter" the better paying, more highly skilled jobs from the labor market external to the firm. A misreading by educators of job entry requirements and entry ports can thus result in trained graduates who cannot find employment appropriate to their skill level—even though employment in the occupation is expanding. In addition, it is important for educators to be able to distinguish between entry-level jobs that are attached to job ladders and advancement opportunities, as opposed to entry-level dead-end positions.

Once it has been determined that a new training program should be established, the question remains as to who or what institutions can best provide the training: employers, schools and colleges, government training programs? Even among education institutions variations in mission and in funding and equipment constraints imply different roles of these institutions in preparing workers for employment.

Survival of proprietary schools, for instance, is dependent on their ability to identify new educational markets and to respond quickly to those emerging demands. Proprietary schools demonstrate a "no-frills" approach to education with few, if any, ancillary services provided to students. Community colleges also provide job skills to students, but, in contrast to private schools, they offer highly subsidized training to all interested students. Vocational schools provide students a cluster of job skills combined with related theoretical foundations in the classroom. In contrast employers seek to give workers more narrow training tailored to the firm's specific production needs.

Some jobs require specific training that must be provided almost entirely on the job. For other occupations, however, such as medical technicians, clerical workers, and skilled crafts occupations, schools can provide most of the required skills. Vocational educators should identify these different patterns and concentrate on aspects of training in which they have a competitive advantage (Vermeulen and Doeringer, 1981). Vocational educators should work with businesses, unions, providers of government training programs, and other educators to determine the institutional mix that best meets the needs of the workers, as well as employers, in local economies.

Research Issues Regarding Vocational Education and Economic Development

In assessing the impacts of the Perkins Act on local economic development, a wide range of interdependent questions needs to be addressed. This section focuses on some of the major issues that should be explored.

I. The Responsiveness of Vocational Education to Changing Labor Market Needs

A. Is vocational education responding to skill mismatches?

A quantitative analysis of trends in occupational supply and demand should indicate potential skill shortages or surpluses and whether the vocational education system is moving in the same direction as the overall economy. Are training programs growing relatively fast in areas where job openings in related occupations have above-average growth rates?[4] Are programs growing relatively slowly or declining where related occupations are experiencing relatively slow growth or decline? Are programs available for occupations projected to grow relatively quickly? Which training programs have low rates of placement, and why?

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[4] See the Appendix of Flynn, 1986, for greater detail on assessing the responsiveness of vocational education to labor market trends.

B. How is vocational education monitoring new and emerging occupational skills and current employment needs?

When employment needs change in ways different from the past, monitoring current employment trends is essential for determining labor market needs. In what ways are vocational educators supplementing employment projections with other types of data? Are mechanisms in place to ensure that information from local employers, government officials, guidance counselors, and placement officers, for example, is being transmitted to vocational educators on an ongoing basis?

C. Is vocational education responsive to the needs of high technology industries?

Training for industries generally included in "high technology" definitions goes well beyond providing skills for engineers and technicians. Such training requires a comprehensive program that addresses a wide range of occupations, skill requirements, and firm sizes. Moreover, the industrial and occupational compositions of high technology industries differ considerably by geographic area. What are the occupational compositions of the local economy's high technology industries? Do these occupations require vocational skills? Is vocational education attuned to the needs of relatively small firms in the high technology sector?

D. How is vocational education helping to revitalize businesses and industries?

The bulk of employment in local economies is found in traditional industries and occupations. Replacement demands, rather than those due to growth, account for the vast majority of projected job openings in most areas. Is vocational education helping traditional employers meet their skilled replacement needs, improve productivity, and remain competitive? Are vocational educators working with the more traditional businesses and industries in the area to ensure they are not being crowded out prematurely by newer employers?

E. Is vocational education helping dislocated workers?

The vast majority of workers likely to be affected by technological change and industrial relocation are already at work. The full spectrum of occupations is vulnerable to technology-induced deskilling and elimination. Moreover, industrial decline, employment cutbacks, plant closings, and layoffs are inherent in the dynamics of production processes and industrial development. Is vocational education helping to prepare the employed for upgrading and promotion opportunities brought about by technological change? Are vocational educators cognizant of internal labor markets, career paths, and hiring and training practices of local firms? Are vocational educators aware of the implications of different patterns of ownership of local plants? Do educators have contacts in local firms that may forewarn them of changes in technologies and product demands that will directly affect current employees?

II. Balancing Short-term and Longer-term Development Objectives

A. Does vocational education recognize "training cycles"?

Vocational education cannot hope to prepare workers for the most advanced skills of companies that are at the forefront of technological change. However, as a technology develops and demands for new skills expand, skills become more generalized and transferable among employers. Training can then be formalized and should be transferred to the educational institutions. Do vocational education policies take into account "training cycles" and facilitate the natural movement of skill training from the workplace to the formal education system? Because training cycles are derived from product and process cycles, their characteristics will vary by product, industry, and firm, and among localities. Hence, the development of training programs that parallel training cycles requires close, ongoing collaboration between employers and vocational educators at the local level.

B. Is vocational education guarding against future skill surpluses?

Does vocational education planning take into account alternative sources of labor supply? Are individuals in the pipeline considered in planning the expansion of programs? How are vocational educators monitoring other sources of skilled labor? Is the expected duration of skill shortages addressed prior to new program design? What are the training and implementation lags involved for occupations for which vocational education is planning programs? Are there mechanisms in place that facilitate the "easy exit" or phasing out of programs no longer needed?

C. Is vocational education providing transferable skills?

The evolving nature of technological change and economic development emphasizes the need for workers able to adapt to industrial and occupational shifts over time. The time frame in which planning and evaluation decisions are made often differs for educators and employers, with the latter generally being much shorter than the former. Are vocational education programs, including customized training, providing skills that are transferable among a variety of workplaces? Better information on the transferability of skills among industries and occupations within local labor markets is needed than has been available in the past. This can be determined by identifying the various occupational and skill needs of businesses and industries in the area and by looking at local patterns of job changing.

D. Is vocational education fostering a diverse employment base?

The vulnerability of a particular community or region to the destabilizing effects of production life cycles depends on the area's mix of businesses and industries. A diversified employment base provides alternative job opportunities for dislocated workers. In contrast, an area whose employment is linked to one major employer, or several firms providing products in similar stages of production, is susceptible to a prolonged period of economic stagnation should these jobs be relocated or eliminated. Is the vocational education planning process part of a more broadly based local economic development strategy that recognizes the need for diversity of firms and industries in an area and for flexible workers able to adapt to employment shifts over time?

E. Is vocational education helping to foster the institutional and program mix best suited to promote economic development in the area?

The various institutional components of the education and training network emphasize different goals, face diverse constraints, and play disparate roles in preparing individuals for employment. Such diversity generates a range of institutional patterns and responsibilities and a mix of business-education linkages within local labor markets. Vocational education cannot and should not be expected to train for every skill need. Moreover, the reality of limited resources in vocational education focuses attention on the need to establish priorities, recognizing that tradeoffs are inevitable. Vocational education should, however, be an integral part of a local education and training system that fosters competitive advantage among of its components—including apprenticeship programs, employer training, the military, programs supported by JTPA—to best meet the needs of workers and employers in the area (Taylor, Rosen & Pratzner, 1983; Flynn, 1981b, 1984a; Bottoms & Copa, 1983).

Assessing Vocational Education as a Tool for Economic Development

The issues and questions discussed above suggest the need for an approach to the assessment of vocational education as a tool for economic development that is disaggregated to the level of decision makers in local labor markets. There is a need to focus on firms, products, and local labor markets to better understand the relationships between vocational education and local economic development and to identify factors leading to divergent outcomes. Industry studies and national statistical studies cannot address the types of analytical concerns posed in this paper.

The use of detailed case studies of local labor markets for such assessments is further supported by empirical evidence that demonstrates:

- Regional specialization within industries by type of production activity, such as R & D, or the assembly of relatively standardized products;
- Regional specialization of production activities within multinational, multiproduct, and multiplant firms;
- Considerable diversity among local areas in their resource mixes, relative factor costs, and market demands;
- Widespread diversity among local high technology sectors;
- Variation in successful economic development strategies among local economies; and
- Considerable variation among local education and training networks.

Research Approach

When analyzed through various classification schemes, such as by type of employment sector or by degree of employment diversification, and when viewed in light of the theoretical framework of production life cycles, an extensive, coherent account of how vocational education relates to economic development can be derived from detailed case studies of local labor markets.

The case studies could focus, for instance, on a variety of local areas representative of particular "types" of labor markets. These might include case studies of:

- Labor markets highly populated by employment in high technology industries—distinguishing between areas in which such employment occurs primarily in branch plants of firms based elsewhere, and those in which they are mainly in "home grown" indigenous, new firms;
- Economically depressed labor markets—distinguishing between areas in which the traditional sector involves primarily low-wage, low-skill production jobs, such as those in apparel, textiles, or shoes, and those composed of relatively high-wage, highly skilled jobs, such as those in automobiles and steel;
- Labor markets with highly diversified employment bases with respect to product and industrial mix, in contrast to labor markets dominated by one employer or group of employers producing products at similar stages of production;
- Labor markets in which the bulk of employment is in smaller firms producing custom-designed or specialty products, compared to labor markets in which large-scale, relatively standardized production dominates;
- Rural and agricultural labor markets compared to urban labor markets.

This research approach should help to identify common trends and patterns as vocational education seeks to facilitate economic development. In addition, the analysis will pinpoint examples of vocational education programs "that work" and those "that don't work" under particular circumstances. This level of disaggregation and detail also will permit identification and analysis of factors responsible for divergent outcomes.

Procedures

Two complementary research procedures are suggested by this approach. First are the collection and analysis of historical, economic, business, and educational data to derive a quantitative overview of trends in the local employment base and the education and training network. Second are intensive micro-studies of contemporary business practices and of decisionmaking and change within education and training institutions, derived from interviews with employers, educators, and other providers of job-related skills.

The first procedure needs to draw upon a wide variety of data sources, such as the U.S. Census of the Population, the Census of Manufacturing, County Business Patterns, Employment Security data, area wage surveys, data on plant expansions and closings, SOICC data, unpublished Ph.D dissertations, industry-specific books and trade journals, company annual reports, government studies, and placement and follow-up reports of graduates. The field research will help to explore and better understand less readily quantifiable factors that may have important impacts on local economic development.

These two research procedures reinforce one another. The historical and statistical analyses help to verify and generalize the findings of the micro case studies; the micro-studies help to interpret the quantitative findings. Only in this way can vocational education be linked more directly to industrial and technological change and to changes in the organization of work and the strategies of businesses that underlie economic development. By pinpointing where and how vocational education can effectively foster economic development, this research approach should also highlight areas for future change in federal vocational education legislation.

References

Abernathy, W. J. (1978). *The productivity dilemma*. Baltimore, MD: Johns Hopkins University Press.

Abernathy, W. J., Clark, K. B., & Kantrow, A. M. (1983). *Industrial Renaissance*. New York: Basic Books, Inc.

Abernathy, W. J., & Utterback, J. M. (1981). Patterns of industrial innovation. In R. R. Rothberg (Ed.), *Corporate strategy and product innovation, 2nd edition*. New York: The Free Press.

Adler, P. (1983). *Rethinking the skill requirements of new technologies (a working paper)*. Unpublished manuscript. Cambridge, MA: Harvard Graduate School of Business Administration.

Alderfer, E. B., & Michl, H. E. (1957). *Economics of American industry* (3rd ed.). New York: McGraw-Hill.

Attewell, P., & Rule, J. (1984). Computing and organizations: What we know and what we don't know. *Communications of the ACM*, *27*(12).

Becker, G. (1964). *Human capital: A theoretical and empirical analysis with special reference to education*. New York: Columbia University Press.

Bergman, E. M., & Goldstein, H. A. (in press). Dynamics, structural change and economic development paths. In E. M. Bergman (Ed.), *Local economies in transition*. Durham, NC: Duke University Press.

Birch, D. (1981). Who creates jobs? *Public Interest*, *15*(4).

Bottoms, G., & Copa, P. (1983). A perspective on vocational education today. *Phi Delta Kappan.*

Braverman, H. (1974). *Labor and monopoly capital: The degradation of work in the twentieth century*. New York: Monthly Review.

Browne, L. E. (1983). Can high tech save the great lake states? *New England Economic Review*. Boston, MA: Federal Reserve Bank of Boston.

Burns, A. F. (1934). *Production trends in the United States*. New York: Bureau of Economic Research.

Chandler, A. D. (1977). *The visible hand*. Cambridge, MA: Harvard University Press.

Doeringer, P. B., & Flynn, P. P. (1982). Manpower strategies for growth and diversity in New England's high technology sector. In J. C. Hoy & M. H. Bernstein (Eds.), New England's vital resource: The labor force. Washington, DC: American Council on Education.

Doeringer, P., & Piore, M. J. (1971). Internal labor markets and manpower analysis. Lexington, MA: D. C. Heath.

Doeringer, P. B., Terkla, D. G., & Topakian, G. C. (in press). Reviving mature economies: Business decision-making, invisible factors, and local economic development. New York: Oxford University Press.

Flynn, P. M. (1984b). Identifying and interpreting skill needs, a case study of Missouri. Report prepared for the Vocational Education Trends and Priorities: A Study of Vocational Education in Missouri. Columbia, MO: University of Missouri—Columbia.

Flynn, P. M. (1985). The impact of technological change on jobs and workers. (Report No. 21-25-82-16). Washington, DC: U.S. Department of Labor.

Flynn, P. M. (1984c). Lowell: A high technology success story. New England Economic Review. Boston, MA: Federal Reserve Bank of Boston.

Flynn, P. M. (1984). Production life cycles and their implications for education and training. A study of high technology in Lowell. (Report No. NIE-G-82-0033). Washington, DC: National Institute of Education.

Flynn, P. M. (in press). Technological change, jobs and human resource planning. Cambridge, MA: Ballinger.

Flynn, P. M. (1986). Technological change, the "training cycle" and economic development. In J. Rees (Ed.), Technology, regions, and policy. Totowa, NJ: Rowman and Littlefield.

Fogel, W., & Mitchell, D. (1974). Higher education decision-making and the labor market. In M. S. Gordon (Ed.), Higher education and the labor market. New York: McGraw-Hill.

Ford, D., & Ryan, C. (1981). Taking technology to market. Harvard Business Review.

Forester, T. (Ed.). (1983). The microelectronics revolution. Cambridge, MA: The MIT Press.

Freeman, R. B., & Hansen, J. A. (1983). Forecasting the changing market for college-trained workers. In R. E. Taylor, H. Rosen, & F. C. Pratzner (Eds.), Responsiveness of training institutions to changing labor market demands. Columbus, OH: The National Center for Research in Vocational Education, Ohio State University.

Freeman, R. B. (1971). The market for college-trained manpower. Cambridge, MA: Harvard University Press.

Goldstein, H. (1983). The accuracy and utilization of occupational forecasts. In R. E. Taylor, H. Rosen and F. C. Pratzner (Eds.), Responsiveness of training institutions to changing labor market demands. Columbus, OH: The National Center for Research in Vocational Education, Ohio State University.

Greenbaum, J. (1979). In the name of efficiency: A study of change in data processing work. Philadelphia, PA: Temple University Press.

Grubb, W. N. (1984). The bandwagon once more: vocational preparation for high technology occupations. Harvard Educational Review, 4(54).

Harris, C. S. (in press). Establishing high technology enterprises in metropolitan areas. In E. M. Bergman (Ed.), Local economies in transition. Durham, NC: Duke University Press.

Hayes, R. H., & Wheelwright, S. C. (1979a). The dynamics of process-product life cycles. Harvard Business Review.

Hayes, R. H., & Wheelwright, S. C. (1979b). Link manufacturing process and product life cycles. Harvard Business Review.

Hekman, J. S. (1980a). The future of high technology industry in New England: A case study of computers. New England Economic Review. Boston, MA: Federal Reserve Bank of Boston.

Hekman, J. S. (1980b). The product cycle and New England textiles. Quarterly Journal of Economics, 94(4).

Hirsch, S. (1972). The United States electronics industry in international trade. In L. T. Wells, Jr., (Ed.), The product life cycle and international trade. Cambridge, MA: Harvard University Press.

Hoover, E. M. (1947). The location of economic activity. New York: McGraw-Hill.

Houthakker, H. S., & Magee, S. P. (1969). Income and price elasticities in world trade. Review of Economics and Statistics, 51.

Karmin, M. W. (1984). High tech: Blessing or curse? News and World Report.

Kraft, P. (1977). Programmers and managers: The routinization of programming in the United States. New York: Springer-Verlag.

Krumme, G., & Hayter, R. (1975). Implications of corporate strategies and product cycle adjustments for regional employment changes. In L. Collings & D. F. Walker (Eds.), Locational dynamics of manufacturing activities. New York: John Wiley and Sons.

Kuznets, S. (1930). Secular movement in production and prices. Boston, MA: Houghton Hifflin.

Lester, R. (1955). Hiring practices and labor competition. Princeton, NJ: Princeton University, Industrial Relations Section.

Levin, H., & Rumberger, R. (1983). The low-skill future of high tech. Technology Review.

Levitt, T. (1965). Exploit the product life cycle. Harvard Business Review.

Malecki, E. E. (in press). High technology sectors and local economic development. In E. M. Bergman (Ed.), Local economies in transition. Durham, NC: Duke University Press.

Malecki, E. E. (1983). Technology and regional development: A survey. International Regional Science Review, 8(2).

Markusen, A. R. (1985). Profit cycles, oligopoly and regional development. Cambridge, MA: The MIT Press.

Mensch, G. (1979). Stalemate in technology. Cambridge, MA: Ballinger Publishing Company.

Munzer, H., & Doody, J. (1981). High tech employment: Massachusetts and selected states. Boston, MA: Division of Employment Security, Job Market Research.

Norton, R. D., & Rees, J. (1979). The product cycle and the spatial decentralization of American manufacturing. Regional Studies, 13.

Oakey, R. (1984). High technology small firms. New York: St. Martin's Press.

Osterman, P. (Ed.). (1984). Internal labor markets. Cambridge, MA: The MIT Press.

Porter, M. E. (1980). Competitive advantage. New York: Free Press.

Rees, J., & Stafford, H. (1984). High technology location and regional development: the theoretical base. Appendix A in U.S. Congress of the United States, Office of Technology Assessment. Technology, innovation, and regional economic development. Washington, DC: U.S. Government Printing Office.

Rees, J. (Ed.). (1986). Technology, regions, and policy. Totowa, NJ: Rowman and Littlefield.

Riche, R. W., Hecker, D. E., & Burgan, J. U. (1983). High technology today and tomorrow: A small slice of the employment pie. Monthly Labor Review.

Segal Quince Wickstead. (1985). The Cambridge phenomena, the growth of high technology industry in a university town. Cambridge, England: Author.

Stevens, D. W. (1976). Employment projections for planning vocational technical education curricula: Mission impossible? Columbia, MO: University of Missouri, Human Resources Research Program.

Stobough, R. (1972). The neotechnology account of international trade: The case of petrochemicals. In L. T. Wells, Jr., (Ed.), The product life cycle and international trade. Cambridge, MA: Harvard University Press.

Taylor, R. E., Rosen, H., & Pratzner, F. (Eds.). (1982). Responsiveness of training institutions to changing labor market demands. Columbus, OH: Ohio State University, The National Center for Research in Vocational Education.

Thomas, M. D. (1980). Explanatory frameworks for growth and change in multi-regional firms. Economic Geography, 56.

Thomas, M. D. (1975). Growth pole theory, technological change, and regional economic development. Proceedings of the Regional Science Association, 34.

Thomas, M. D. (1985). Regional economic development and the role of innovation and technological change. In A. T. Thwaites and R. P. Oakey (Eds.), The regional economic impact of technological change. New York: St. Martin's Press.

Thwaites, A. T., & Oakley, R. P. (1985). The regional economic impact of technological change. New York: St. Martin's Press.

Tilton, J. E. (1971). *International diffusion of technology: The case of semiconductors*. Washington, DC: The Brookings Institution.

U.S. Congress of the United States, Office of Technology Assessment. (1986). *Structural unemployment: Reemploying displaced adults*. Washington, DC: U.S. Government Printing Office.

U.S. Congress of the United States, Office of Technology Assessment. (1984). *Technology, innovation and regional economic development*. Washington, DC: U.S. Government Printing Office.

U.S. Congress of the United States, Office of Technology Assessment. (1983b). *Technology, innovation and regional development, census of the state government initiatives for high technology industrial development*. (Background paper). Washington, DC: U.S. Government Printing Office.

Utterback, J. M., & Abernathy, W. J. (1975). A dynamic model of process and product innovation. *Omega*, *3*(6).

Vermeulen, B., & Doeringer, P. B. (Eds.). (1981). *Jobs and training: Vocational policy and the labor market*. Boston, MA: Martinus Nijhoff Publishing.

Vernon, R. (1979). The product cycle hypothesis in a new international environment. *Oxford Bulletin of Economics and Statistics*, *41*.

Vernon, R. (Ed.). (1970). *The technology factor in international trade*. New York: Columbia University Press.

Vinson, R., & Harrington, P. (19787). *Defining high technology industries in Massachusetts*. Boston, MA: Department of Manpower Development.

Wasson, C. R. (1978). *Dynamic competitive strategy and product life cycles* (3rd ed.). Austin, TX: Austin Press.

Wells, L. T., Jr. (1972). International trade: The product life cycle approach. In L. T. Wells, Jr., (Ed.), *The product life cycle and international trade*. Cambridge, MA: Harvard University Press.

ASSESSING THE IMPACT OF THE CARL D. PERKINS VOCATIONAL EDUCATION ACT: ECONOMIC DEVELOPMENT ISSUES

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Introduction

The Statement of Purpose of the Carl D. Perkins Vocational Education Act begins with the following words: "It is the purpose of this Act to—(1) assist the States to expand, improve, modernize, and develop quality vocational education programs in order to meet the needs of the Nation's existing and future work force for marketable skills and to improve productivity and promote economic growth; ..." (emphasis added).

The objectives of this paper are to:

- Identify compelling reasons why the federal government should commit resources to these uses;
- Review the highlights of recent institutional dynamics in both the private and public sectors as the nation responds to international competitive forces;
- Define the role(s) for federal support of vocational education within this context; and
- Explore how the National Assessment team might gauge achievements to date with respect to these standards.

Why Should the Federal Government Commit Resources to Enhance Productivity and to Promote Economic Growth?

There are at least three compelling reasons why the federal government should commit resources to the objectives set forth in the Statement of Purpose of the Carl D. Perkins Vocational Education Act:

(1) Individuals, employers, and state and local governments will all underinvest in measures that enhance productivity.

(2) Our collective interest in future productivity will not be reflected in the actions of individuals, employers, or state and local governments.

(3) The nation's affirmative action priorities will not be honored by state and local agents without federal inducements.

Underinvestment in Transferable Productivity

The underinvestment phenomenon occurs because the agents in question are unable to control the circumstances that are necessary to assure that a return on the investment will be forthcoming. The major constraint here is mobility. For example, suppose that a state or local government, or an employer, invests in training me. If I then move to another locale, the return on that investment will accrue to someone other than the original investor. Similarly, if I invest in training that is not portable, control over my ability to receive a return on that investment is shared with my employer.

One consequence of the inability to guarantee continuity of employment is a lower level of investment in training. For recent surveys of the literature on this topic see Katz (1986) and Lazear (1986).

Since the nation's ability to capture the returns from investments in transferable skills exceeds that of any single employer or state and local government, there is a compelling federal interest in promoting the development of such productivity enhancements.

Underinvestment in Future Resilience of Productivity

The nation also has a greater interest in the future resilience of productivity than do the agents with a more limited scope of interest. When skill obsolescence occurs, private sector employers in the United States have little or no obligation to renew an employee's productivity. The employer's interest in employee adaptability is confined to anticipated requirements within the enterprise. Based on past evidence, it is likely that many employers will underinvest in their employees' future resilience.

State and local government agents will also underinvest in future resilience. They will do so because the return on their investment may accrue elsewhere and because today's revenue commitments are costly in terms of higher taxes or reduction of other services with no compensating benefit that is immediately apparent.

It is equally unlikely that individuals can be relied upon to invest in future adaptability at a socially optimal level. The likelihood or anticipated consequences of future skill obsolescence are not issues that most of us are equipped to analyze or care to dwell upon.

It is clear that the nation's interest in future resilience (i.e., work force adaptability) will not be reflected in the actions of individuals, employers, or state and local government agents. It remains to be shown in a subsequent section of this paper that the timing of federal action in the past also may have reduced the nation's competitiveness.

Inattention to Affirmative Action Priorities

The cost of achieving equality of qualification for a specified employment opportunity differs among us for many reasons. For our purposes, the reasons why this is so are less important than are the consequences of the differences. International competitive forces assure that few employers or state and local government agents are going to incur "unnecessary" costs that reduce their ability to compete.

Of course, the same argument is made with respect to the nation's competitiveness. Like compliance with health and safety standards, target group advocacy is said to be too costly. Competitive economic forces rule out any hope for serious advocacy by individual employers or state and local government agents. Advocacy must be a federal responsibility.

There are, then, compelling reasons why the federal government should commit resources to develop the productive potential of the nation's work force. Voluntary actions by individuals, by employers, and by state and local governments will not achieve a level of current productivity, a degree of future adaptability, or a pattern of equal employment opportunity, that is consistent with the nation's values and potential.

The Private Sector Workplace is Changing And the Public Sector is Responding

Within what context do federal actions to invest in the productive potential of the work force take place? The National Assessment team must recognize and describe important changes in the workplace that have occurred during the past five years. Furthermore, they must anticipate what is likely to transpire in the near future.

A good starting point for thinking about these issues is the October 1986 Scientific American, a publication wholly devoted to the topic: "Materials For Economic Growth". There it is noted that the historical dependence of production on nature's raw materials has been severed. Today, the uses for materials create a response in the form of synthetic "designer" materials (Clark & Flemings, 1986). The consequences of this reversal from a dependence of application on available materials to an application-driven development of appropriate materials will be profound for the nation's skill training institutions.

The interdependent forces of technology and international competition have already created fundamental changes in the workplace, which must be considered in the design of the National Assessment (Flynn, 1986). Even our ability to describe the typical employment relationship is challenged by the recent creation of many types of special-purpose principal-agent arrangements.

Principal-Agent Institutions

The exposure of previously sheltered enterprises in the United States to relentless international competitive forces has resulted in a host of newly defined reciprocal obligations involving management as principal and worker as agent. These changes are of great importance for the National Assessment. The extraordinary growth of temporary-help service agents, for example, continues to recast the traditional relationship between an employer and an employee. Management's obligation to the individual worker is weakened, and the worker's loyalty is focused elsewhere.

Another new management/worker arrangement, employee leasing, introduces a third-party agent who accepts responsibility for many of the personnel management functions that previously were performed internally by the enterprise for which the employee worked. Subcontracting of activities that historically had been performed within a production facility also redefines employee working conditions, including training opportunities and employment stability.

The introduction of "pay for knowledge" cross-training practices has resulted in the elimination of many job classifications, which has redefined the complementary roles for institutional and on-the-job training activities.

For the National Assessment, the importance of these innovations in the employment relationship lies in their redefinition of the reciprocal commitments between employer and employee. The public sector role, and vocational education's role within this context, must also be redefined in response to these changes.

The Public Sector Response to Redefined Principal-Agent Commitments

The private and public sectors are interdependent; each responds to actions by the other. Some of the important innovations in private sector personnel practices have appeared as a response to public sector initiatives. For example, 44 of the states now offer some form of "customized training" at state expense. This practice is a direct response to competitive forces among the states to retain and expand employment opportunities. What began as state initiatives to attract new and expanding manufacturing industries has now spread to include service industries as well; subsidies to retrain incumbent employees have become an expensive addition to the arsenal of competitive enticements (Stevens, 1986).

In addition to a willingness to offer state funds for employer-specific training purposes, State Employment Security Agencies are expanding the range of services offered. A new use of the General Aptitude Test Battery, called Validity Generalization, has spread among the country's public employment services. Here, personnel screening costs are willingly borne by the states as part of their competitive attempt to reduce the employer's cost of doing business.

These practices are important indicators of the governors' responses to international competitive forces and growing capital mobility. Private enterprises are becoming more sophisticated in their willingness to accept public monies, particularly in light of the states' commitments to nonintrusive management of such cooperative ventures. All these innovations have important implications for the National Assessment.

This, then, is the dynamic institutional context within which the federal role for vocational education must be defined. The boundary between private and public sector commitments to incur the "costs of doing business" has shifted toward greater state participation. What is the federal role?

The Federal Role in Vocational Education

The federal commitment of funds to vocational education and training is small relative to state and local investments. This is why the language in the Statement of Purpose of the Perkins Act is proactive, encouraging the actual providers of education and training to ". . .expand, improve, modernize and develop. . . ." The federal role must be to use extremely limited resources to leverage state and local actions at the margin. To do so requires an ability to target limited funds efficiently (i.e., to direct funds to those who are intended to benefit from federal advocacy, while simultaneously minimizing the "leakage" of resources into other unintended uses).

Federal investment at the margin should not be interpreted as applying only to growing resource commitments. If, as Charles Benson suggests in his paper included in this volume, a problem worthy of federal attention is too much access to low quality vocational education offerings, then federal funds might be used to create an incentive to reduce state and local sponsorship of such activities.

The federal commitment to vocational education must also be considered in the context of related federal expenditures. Here a distinction between provision of services and the production of those services must be made (Kolderie, 1986). For example, many skill training services are provided through the Job Training Partnership Act (JTPA); but the skill training is actually produced, in many cases, by vocational education institutions. This provision versus production distinction is particularly important when the relevance of organization and process variables as determinants of vocational education's performance is considered (Chubb & Moe, 1986; Oakes, 1986.)

Criteria for Assessing Policy Choices

To be responsive to Congress, which is after all a legislative body, the National Assessment team must develop a basis for responding to hypothetical (i.e., unobserved) policy options, such as: "Should federal commitments to targeted populations be consolidated under the Job Training Partnership Act?" To do so will require early identification of a manageable number of possible choices ranging from retaining the status quo to adoption of amendment language from plausible alternatives. Each of the legislative provisions that is "flagged" in this way must be supported by four types of data as evidence:

(1) A reliable estimate of the effect(s) of retaining the status quo, versus adopting each of the plausible (but unobservable) alternatives;

(2) The expected importance of this estimate for deciding whether action should be taken with respect to a specific provision of the Perkins Act;

(3) A practical method for deriving such an estimate of the effect, within the budget constraints imposed on the National Assessment;

(4) The provision in question must be demonstrably "important," meaning that it lies at the heart of the nation's expectations for federal involvement in vocational education management and funding.

What Provisions Meet These Four Criteria?

In this section, attention is restricted to the following phrase from the Perkins Act's Statement of Purpose: ". . .meet the needs of the Nation's existing and future work force for marketable skills and to improve productivity and promote economic growth. . ." I have outlined three reasons for a federal commitment of resources to these goals at the beginning of this paper. These federal responsibilities underlie the choice of issues that satisfy the four criteria stated above.

Three questions that warrant National Assessment attention, in the order of their likely importance for future congressional deliberations, are:

(1) What impact has the Perkins Act had in compensating for the untoward effects of action and inaction by public and private sector agents who are motivated exclusively by self-interest?

In other words, have activities conducted under the auspices of the Act succeeded in compensating for the important market failures cited earlier? How does this performance compare with the anticipated, but unobserved, performance of plausible alternative approaches to achieve the same ends?

(2) How has target group advocacy through the Act affected the mix of classroom and worksite learning opportunities: What impact has this "composition effect" had on responding to the needs of the current and future work force to learn marketable skills?

It is assumed that an assessment of the effects of advocacy per se will be conducted in response to the first question. In addition, however, the National Assessment must identify and estimate the effects of advocacy on the other federal goals. Obviously, there are many interdependencies among the stated goals (e.g., tradeoffs between enhancing current productivity and investing in future resiliency in the event of changing skill requirements). This particular effect, from pursuit of advocacy goals to impacts on other goals, is singled out because it is certain to be high on the congressional agenda, and the quality of existing understanding is abysmal.

(3) How have activities funded through the Act affected and been affected by the composition of the current and the expected future work forces?

The three stated federal responsibilities are clearly intended to offer opportunities that would not have been available otherwise. These opportunities bring together old and new constituencies with old and new activities. The characteristics of each influence the other three. It is essential that the National Assessment be able to identify forces that promote responsiveness and those that inhibit change. Work force responses to new skill development opportunities should be describable in terms of who is participating, what the nature of their subsequent employment is, and what compensation they receive for their work. All these factors should be considered relative to the unobservable, hypothetical events that would have unfolded in the absence of the Act. It should also be possible to detect systemic responses to demands for service from new constituents, such as assessment or instructional and placement service modifications to meet the special needs of designated target populations. These activities, too, should be measured relative to an unobserved level and composition that would have been exhibited in the absence of the Act.

Together, these three overarching questions cover the critical matters of: (1) target efficiency; (2) advocacy in the national interest; and (3) responsiveness to changing circumstances. If the National Assessment can achieve reliable estimates of the Act's effects in these three areas, relative to plausible but unobservable alternative approaches, it will meet its congressional mandate and serve the nation's interests well indeed.

How, then, might each of the three questions be addressed? Suggestions are offered in the next section.

Suggested Approaches to Achieve Reliable Estimates of the Act's Impacts

Earlier, I identified and discussed three types of market failure. The Act should be assessed, in part, on the basis of evidence that activities funded through its auspices have compensated for these failures. Furthermore, hypothetical alternative approaches to achieving the same result should be considered. This is the only way to inform Congress about the appropriateness of the Act's current provisions.

For reasons that are apparent from the previous discussion, the resources provided through the Act are insufficient to have caused large effects. Therefore, the search for evidence of increased investments in productivity enhancements, for example, should focus on estimates of *marginal* investment behavior, both with respect to current skill requirements and future adaptability. Similarly, evidence of advocacy accomplishments must be sought in terms of *marginal* improvements.

Compensation for Current Underinvestment Levels

The evidence sought is a reliable estimate of a higher level of currently marketable skills, that is, higher relative to other plausible approaches with a comparable resource commitment.

A question immediately arises: Should we be attempting to estimate *average* effects, or *best practice* effects (Klitgaard & Hall, 1973)? The former will be more difficult to detect, and their meaning for congressional review purposes is questionable. The latter are subject to skepticism because of well-known weaknesses in our ability to specify human capital production functions (Hanushek, 1986; Meyer, 1982; Stevens, 1983). Best practice estimates are of policy relevance only if the truly important "levers" to achieve the observed outcome are detected (Chubb & Moe, 1986).

Despite the frailties of the best practice approach, its adoption is urged. Estimates of average effects are unlikely to satisfy the "reliability" and "importance for congressional deliberations" criteria, which were suggested above for choosing effects worth pursuing. The talents of the National Assessment team are well suited to conduct state-of-the-art searches for "outlier" effects. If, *for example*, we ask what *measurable conditions* appear to have been associated with unusually large marginal impacts on currently marketable skills, when federal funds have been committed through the Act, the "outlier" observations actually become the center of attention. Once factors have been identified that appear to explain the unusual magnitude of impact, the analyst must then decide whether these are replicable.

Another reason for preferring the "outlier" approach is the known weakness of the Act's policy instruments. With the sole exception of fund restrictions on behalf of targeted populations, few statutory constraints are found in the Act that would suggest a sufficient concentration of federal funds on a specific activity to create a detectible marginal effect. What is proposed, then, is a search for outlier effects in activity categories for which federal funding has been available. In this way, the National Assessment will be estimating the combined effects of all sources of funds. If plausible evidence can be marshalled that the conditions for "success" have been identified, and that federal funds appropriated through the Act can nurture such conditions elsewhere, it will still be necessary to estimate what the effects of unobserved alternative uses of a similar level of federal funding would have been.

What measure is proposed to search for unusually large marginal effects on currently marketable skills? Marketability is highly idiosyncratic. Mere competency measurement does not provide a market test, particularly if affective competencies are not considered. Placement evidence is subject to the following weaknesses:

(1) A placement is a transaction that has no direct connotations of well being. No measure of even entry-level productivity can be inferred (Brown, 1982). Nor does a placement indicate relative access to continued learning or any job satisfaction.

(2) A placement may be a measure of marketing success, which can be independent of value added in the form of marketable skills. Asymmetry of information available to the parties to a placement transaction (school, employer, and graduate) urges caution in drawing too hasty a conclusion about the distribution of benefits among the parties.

(3) Assignment of placement weights among alternative employment, military service, and continuing education activities is fraught with dangers of unintended effects. (For example, the often touted "2 plus 2" linking of secondary and postsecondary occupational skill training programs raises many questions regarding the proper assignment of value added, including option values.)

(4) Interesting questions about interdependencies among time periods arise (Cavin & Maynard, 1985). If poorly qualified candidates are marketed today, placement of tomorrow's candidates may be more difficult. (This is one of the few positive features of the placement measure: It presumably has a feedback effect on the screening criteria that are used to enroll students, although this can prove to be a serious deterrent to enrollment of "high risk" candidates, which is an important negative feature.)

(5) Well-known problems in assuring accuracy of reporting are encountered (Dickinson, Johnson, & West, 1986). This concern is of particular importance if accurate reporting about those who leave a local community is questionable. The use of contribution and wage report information from state Employment Security Agency unemployment insurance records avoids this problem within a wage-reporting state, but movement beyond state boundaries still presents problems. Incidentally, contrary to Roger Vaughn's claims, this approach has been used in substate applications since 1962, when Michael Borus used these data for evaluation purposes (Stevens, 1978).

(6) Placements are obviously subject to both structural and cyclical events, over which the educational institution exercises no control. Well-known problems in the timing of resource adjustments based on historical events inevitably arise.

It is reasonable to conclude from this listing of deficiencies that the use of placement rates for performance measurement purposes is not optimal.

Having dismissed the appropriateness of both competency measurement and placement information for purposes of estimating marginal impacts on the marketable skills of the current work force, what acceptable alternatives are available? I suggest that evidence of complementarities between occupational skills developed at public expense and private sector investments is one alternative. Remember, placement information does not serve this purpose because differential placement rates may reflect many things other than complementarities between public and private sector investments. A high placement rate may signal a substitution of public sector resource commitments for what had previously been, and might have remained, private sector commitments.

How should the search for complementarities be mounted? The data collected from 3,500 employers by the Gallup Organization for the National Center for Research in Vocational Education (NCRVE) in 1982 offers useful insights about complementarities between public and private sector investments and about size-of-establishment correlates of training investments (Bishop, 1986). The High School and Beyond (HSB) data can also be used to identify and model such complementarity dynamics.

In addition, case studies of exemplary public-private complementarities should be undertaken. The case study approach is endorsed for two reasons. First, there is evidence that organization and process factors are important determinants of differences in "success," however that term is defined (Chubb & Moe, 1986; Oakes, 1986). Second, anecdotal evidence is an important supplement to statistical estimates that are unlikely to be transparent and compelling. The latter pessimistic conclusion is reached because insufficient attention has been given in the past to choosing policy-relevant units of analysis before data are collected. Continuing debates involving distinctions between vocational courses and vocational programs exemplify this problem, as do controversies about the adequacy of organization and process measures.

Underinvestment in the Future Resilience of Marketable Skills

Earlier in this paper two important conclusions were stated. First, it was asserted that nonfederal agents will underinvest in the future—because of information imperfections, because of an ability to shirk the consequences of future obsolescence, and because competition for limited resources creates political incentives to favor the present over the future. Second, it was asserted that the historical timing of federal commitments to future resilience may have reduced the nation's competitiveness. The National Assessment's responsibility will be to elaborate upon the former conclusion, and to seek evidence regarding the accuracy of the latter provocative hypothesis.

The behavior of nonfederal agents with respect to present orientation should require nothing more than a targeted review of literature by a competent social scientist.

The hypothesis that the federal response to a compelling public interest in future orientation has been poorly conceived is a more complex matter. The basis for the hypothesis follows. Two features of the future are known with certainty: We know for sure that today we do not know what occupational skill changes are going to occur in the future. And, we know with certainty that we cannot identify now who is going to be required to acquire these unknown skills in the future.

Together, these two facts assure that the target efficiency of today's investments in tomorrow's resilience will be low. If, in addition, we recognize that unused cognitive knowledge is subject to obsolescence (Bishop, 1986), strong doubts arise about training today for tomorrow's jobs.

The National Assessment can proceed along two fronts with respect to this issue. On the one hand, it will be important to elaborate upon the theoretical basis for the stated hypothesis. On the other hand, it will be necessary to gather evidence that addresses the matter.

If the nation's international competitiveness today is weakened by a mistaken commitment of federal resources for the promotion of future occupational skill resilience at the expense of currently marketable skills, then the cost in lost productivity may well be high. Stated in another way, if federal commitments are switched from future resilience applications to current needs, then a dividend in the form of higher national productivity should be expected to accrue. This social dividend could then be devoted, in part, to responding to changing skill requirements as they arise and only on behalf of those who are affected (i.e., a more target-efficient approach).

The merits of the approach outlined above are so obvious that skepticism is aroused: "If the net benefits are so obvious, why aren't we doing it that way?" Part of the answer lies in the absence of a "clan" ethic in the United States (Ouchi, 1984). Few of us would be willing to accept the following promise: Let us (society) invest less in your future adaptability now, thereby gaining a national competitive edge today; and then, in the event that your own competitiveness is jeopardized in the future, we (society) will assure you access to appropriate renewal.

A more cynical view of the nation's preference for the commitment of resources today, as a hedge against the possibility of obsolescence in the future, is that this serves as an inexpensive excuse for "blaming the victim" later. Since we don't know what the skill requirements will be in the future, it is difficult to know how investments in resilience should be carried out beyond the basic numeracy and literacy building blocks. However, precisely because of this ambiguity, many activities can be advertised as essential to prepare for the future. Who is to say that they are not essential? Later, when individuals are displaced, substantial blame can be placed on the victims themselves for having failed to take advantage of the nation's wise investment in the future.

State-customized training programs offer an opportunity to study an exemplar of two important features of this alternative approach. First, these programs extend the boundary of public funds being invested in currently marketable skills on behalf of specific employers. Second, these same programs are moving quite rapidly into commitments of public funds for the purpose of retraining incumbent employees of previously sheltered enterprises that now are being buffeted by international competitive forces. In other words, both the "invest now in today's marketable skills" and the "invest later on behalf of those whose skills become obsolete" approaches are being carried out simultaneously by the states, but on behalf of different age groups.

Is it contradictory to have argued that nonfederal agents pay too little attention to future considerations, and then to acknowledge that the states have responded to skill obsolescence? I would say, "No." In fact, the evidence supports the view that the states prefer to deal with current competitive pressures.

Is it contradictory to have argued that there is a compelling need for federal resource commitments with a future orientation, and then to propose addressing today's problems today, thereby generating a nest egg for tomorrow? Again, I would say, "No." The future orientation here involves decisions about how to define the social dividend—how much of it to reserve for renewal purposes and how the incidence of the retrieval will be distributed. Obviously, the National Assessment must draw a line with respect to how many of these questions fall within their defined scope of work.

The Federal Government as Advocate

The reader will recall that a conclusion reached earlier is that nonfederal agents will fail to behave in the national interest with respect to target group advocacy. An implicit assumption in stating that conclusion was that there are real cost differences among individuals to achieve equality of qualification for comparable employment opportunities. It is in this respect that a critical federal responsibility has been identified.

Clearly, questions about resource absorption and alleged "stigma" effects of target group advocacy on other goals will be raised by Congress when amendments to the Act are considered. In this subsection only the advocacy issue itself is addressed; interdependence is treated in the next section.

The choice of unit of analysis is crucial. If classroom and worksite activities are complementary inputs for the production of a qualified candidate for employment, then it is absolutely essential that both types of activity be identified separately. This is the only way that reliable estimates can be derived from the independent and joint contributions of these types of activities to the enhancement of target group qualifications for employment. For example, if federal funds are being spent on classroom activities, which by themselves can be demonstrated to be inadequate preparation for a specified employment opportunity, then a requirement could be introduced that federal monies should not be spent on these activities unless they are combined with designated complementary activities (e.g., worksite exposure).

Here, too, outlier exemplars should be sought using a case study approach. Advocacy is an important federal responsibility. The states are moving in the direction of lower levels of intrusiveness on business. It is imperative that federal monies not be "put on the stump" with respect to this responsibility. The National Assessment must determine whether effective advocacy is possible through the auspices of the Act; and, if so, what the "levers" are to accomplish the desired goal. Again, repeating Charles Benson's observation, it should be obvious that improved access to low quality classroom activities is not an appropriate investment of limited federal dollars.

Federal compensation for the failure of self-interested nonfederal agents to recognize advocacy priorities in their actions is an important topic for analysis, but it is only part of the story.

Does Advocacy Impose a "Stigma" Cost on the Pursuit of Other Goals?

Suppose that the National Assessment derives a reliable estimate of important complementarities between public investments in occupational skills training for target group members and their subsequent access to on-the-job human capital enhancement opportunities. It is certain that those who worry about stigmatization of vocational education will still claim that the opportunities for nontargeted students are sufficiently damaged by this investment that the combined effect on both targeted and nontargeted students is substantially less attractive, and may even be cause for withdrawing the investment or channeling it through a source other than vocational education. Development of reliable evidence to assess the accuracy of this claim should be a high priority for the National Assessment staff.

What evidence can be brought to bear on this matter of interdependence between the pursuit of advocacy goals and other objectives of the Act? First, attitudes of instructional staff members, students, parents, employers, and the community at large can be assessed. Second, curriculum assignments can be examined. Third, participation in worksite instructional activities can be analyzed. Fourth, employer recruitment practices can be reviewed. The attitudinal evidence would tell us what affected parties say. The other types of evidence address how these parties actually behave. Both are important, because inconsistencies might be exposed; and inconsistencies between what people say they believe and how they respond in actual situations offer extremely powerful evidence to destroy myths.

Vocational Education and Work Force Composition

Up to this point, the assessment issues that have been examined focused on target efficiency and advocacy criteria. Here, we are interested in estimates of two types of responsiveness. First, members of Congress will be interested in evidence that federal vocational education funds have "softened" state and local level systems—improving the timeliness and substance of responses to such events as new technologies, capital mobility, consumer taste dynamics, and changes in the location, size, and composition of student populations. But, in addition to being interested in the responsiveness of the vocational education system to these dynamics, we also want to know whether the system is able to mold the present and future labor force at the margin. What is sought is evidence that the availability of occupational skill training influences who chooses to participate in the work force and how that decision pays off, both for the individual and for the nation.

So, evidence of three effects is sought:

(1) Systemic responses to changes in external circumstances;

(2) Work force responses to changes in the availability of vocational education offerings; and

(3) Private and social payoffs to this responsiveness.

Case study methods are likely to be most successful in detecting the first and second types of effect. In keeping with the views expressed earlier about the relative usefulness of information about average practices versus exemplary practices, examples of substantial responsiveness should be addressed here.

Many observers, particularly economists, consider the third question to be the most important topic for investigation in the National Assessment: What are the private and social payoffs to the nation's investment of limited federal resources in vocational education? Obviously, this question also encompasses advocacy and responsiveness considerations.

A substantial theoretical and empirical literature is available on this topic (Bishop, 1986; Cavin & Maynard, 1985; Dickinson, Johnson, & West, 1986; Hanushek, 1986; Meyer, 1982; Stevens, 1983). References cited in each offer a valuable excursion through the issue.

Recall these conclusions stated earlier:

- Evidence of improved access to intermediate activities (e.g., vocational education courses) tells us nothing about achievement of the ultimate social goals that may be sought through this investment.

- Use of "training-related" placement rates as a basis for funding decisions introduces incentives that are likely to be inconsistent with the goals of federal investments in vocational education.

Neither access to an intermediate activity nor passage from school to work tells us whether the individuals who participated prosper thereafter. Is "better" use made of their individual talents? Are they "more" satisfied in their work? Do they have "more" employment options? In each case, the question is posed with reference to an unobservable standard—what would have happened in the absence of this choice of action? Even if appropriate comparison groups are identified to solve this problem (Cavin & Maynard, 1985; Dickinson, Johnson, & West, 1986), have other people been affected by the actions of these individuals? Both "vacuum" and "substitution" effects are possible. In the former, actions by the vocational education participant enhance opportunities for others by filling critical skilled positions that create employment opportunities for others. In the latter case, vocational education participants substitute for others who would have gotten the jobs otherwise.

Here again, the choice of unit of analysis is of critical importance. Advocacy is intended to create a substitution effect, which requires a clear identification of those who are intended to benefit from the advocacy.

It is easy to find fault with enrollment patterns and placement rates as measures of impact. It is much more difficult to offer a practical alternative. Cross-sectional data suffer from uneven measurement of inputs with different vintages (Hanushek, 1986). Longitudinal data exhibit limited time coverage, uneven recording of events, unfortunate choices of a unit of analysis (in many, but not all, cases), and weak representation of environmental factors (Chubb & Moe, 1986).

Great progress has been made in the design of longitudinal data sets, such as the Panel Survey of Income Dynamics, the National Longitudinal Survey, and High School and Beyond. Similar progress has been made in the development of statistical techniques to analyze such data. These and others will be useful for the National Assessment; none will suffice.

Finally, it should be noted that the recommended combination of case studies, statistical estimation, literature review, and conceptual development is intended to compensate for the inadequacy of process measures, evidence of differential placement rates, and definitive estimates of lifetime earnings impacts. The availability of routine recurring renewal opportunities—my three R's for the 1990s—diminishes the importance of precise estimates of lifetime impacts. The states' customized training program investments offer valuable insights about such activities.

On the Market for Golden Parachutes

Unlike the recent fate of general revenue sharing, what is at issue here is not a "yea" or "nay" decision. The question is not whether to commit federal funds to vocational education purposes. Rather, the issue is how much to commit for what purposes on whose behalf. The target efficiency, advocacy, and responsiveness criteria for assessment that have been proposed in this paper address the "for what purposes" and "on whose behalf" issues.

The National Assessment is unlikely to discover a Rosetta stone that will allow us to decipher the hieroglyphics that emerge from the day-to-day interactions of students, teachers, administrators, employers, parents, and significant others. Having said this, I am optimistic that the talented team that has been assembled will offer a reasonable substitute for a Rosetta stone!

References

Bishop, J. H. (1986). Academic education and occupational training. Unpublished manuscript. Ithaca, NY: New York State School of Industrial and Labor Relations, Cornell University.

_______ . (1982). The social payoff from occupationally specific training: The employer's point of view. In Studies in employment and training policy: No. 3, Columbus, OH: The National Center For Research In Vocational Education, The Ohio State University.

Brown, C. (1982). Estimating the determinants of employee performance. Journal of Human Resources, 17(2), 178-194.

Cavin, E., & Maynard, R. (1985). Short-term indicators of employment program performance: Evidence from the supported work program. Journal of Human Resources, 20(3), 331-345.

Chubb, J. E., & Moe, T. M. (1986). No school is an island: Politics, markets, and education. Brookings Review, 4(4), 21-28.

Clark, J. P., & Flemings, M. C. (1986). Advanced materials and the economy. Scientific American, 255(4), 51-57.

Dickinson, K. P., Johnson, T. R., & West, R. W. (1986). An analysis of the impact of CETA programs on participants' earnings. Journal of Human Resources, 21(1).

Flynn, P. M. (1986). Vocational education and economic development: The need for balance. Waltham, MA: Bentley College.

Hanushek, E. A. (1986). The economics of schooling: Production and efficiency in public schools. Journal of Economic Literature, 24(3), 1141-1177.

Hollenbeck, K. M., & Smith, B. (1984). Hiring for productivity: An analysis of actual hiring behavior of firms. Columbus, OH: Ohio State University, National Center For Research In Vocational Education.

Hollenbeck, K. M., & Stevens, D. W. (1986). Vocational education: A compelling local, state, and federal responsibility. Alexandria, VA: American Vocational Association.

Katz, L. F. (1986). Efficiency wage theories: A partial evaluation. (Working Paper No. 1906). Cambridge, MA: National Bureau of Economic Research.

Klitgaard, R. E., & Hall, G. R. (1973). A statistical search for unusually effective schools. (Report No. R-1210-CC/RC). Santa Monica, CA: Rand Corporation.

Kolderie, T. (1986). What do we mean by "privatization"? (Contemporary Issues Series 19). St. Louis, MO: Washington University, Center for the Study of American Business.

Lazear, E. P. (1986). Incentive contracts. (Working Paper No. 1917). Cambridge, MA: National Bureau of Economic Research, Inc.

Lillard, L. A., & Tan, H. W. (1986). Private sector training: Who gets it and what are its effects? (Report No. R-3331-DOL/RC). Santa Monica, CA: Rand Corporation.

Meyer, R. H. (1982). An economic analysis of high school vocational education. In The federal role in vocational education, (pp. 1-26). (Special Report No. 39). Washington, DC: The National Commission For Employment Policy.

Oakes, J. (1986). Keeping track, part 2: Curriculum inequality and school reform. Phi Delta Kappan, 68(2), 148-154.

Ouchi, W. (1984). The M-form society. Reading, MA: Addison-Wesley Publishing Company.

Stevens, D. W. (1983). Outcomes for vocational education: Economic perspectives. In F. L. McKinney and P. Fornash (Eds.), Selected evidence supporting or rejecting eighteen outcomes for vocational education, (pp. 185-215). Columbus, OH: Ohio State University, National Center For Research In Vocational Education.

_______. (1986). State customized training programs: Past, present and future. Paper presented at the fourth annual meeting of the National Association of Industry-Specific Training Programs, Atlanta, GA.

_______. (1978). Performance measurement in the CETA systems. In CETA: An analysis of the issues, (pp. 217-241). (Special Report No. 23). The National Commission for Employment Policy.

_______. (1986). Three R's for the 1990s: Routine recurring renewal. Alexandria, VA: American Vocational Association.

COMMENTS ON VOCATIONAL EDUCATION AND ECONOMIC DEVELOPMENT

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Introduction

I have been asked to respond to papers presented to the Design Conference for the National Assessment of Vocational Education in the area of Vocational Education and Economic Development.[1] I make the assumption that I have been asked to do so primarily on the basis of my experience as a practitioner in the field of employer-based training, rather than on my experience as a social scientist. As a consequence, I'll not address questions of research design, but will focus on the appropriateness of the proposed research questions to the goal of this assessment process. I define the goal of the National Assessment of Vocational Education to be the measurement of the effectiveness of vocational education practices or programs in promoting or facilitating economic development.

Specifically, an "effective" vocational education practice would exist when a positive correlation could be established between a particular vocational education activity/program and selected measures of economic development (i.e., either maintenance of a specified economic level in a period of relative decline, or growth in a period of relative economic stability). This definition of goal addresses only the question of whether past practice/programs have been effective. It does not predict the effectiveness of future programs, although the implication for future action is that one should discontinue those practices/programs that do not work and continue or expand those that do. I hope that I'm not belaboring the obvious by making these clarifications. My aim is simply to provide a basis for discussion about the appropriateness of the research questions posed in the two papers.

If the above statements are appropriate, then the next question centers on the validity of the ways in which the papers presented by Patricia Flynn and David Stevens have chosen to: (1) operationally define vocational education; and (2) define and measure economic development, and the assumed relationships between the variables so defined. These "assumed relationships" (hypotheses) provide a structure upon which to compare the papers and their differing assumptions and definitions. I have listed below some of the assumptions I would like to address specifically. Each is addressed in turn.

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[1] Comments are in response to papers prepared by Dr. Patricia Flynn and Dr. David Stevens for the Design Conference.

Basic Assumptions

Effective vocational education increases the employability of the student, were employability is defined as job placement upon program completion.

An underlying assumption here is, of course, that "employability" is a valid operationalization of economic development. Dr. David Stevens' paper, "Assessing the Impact of the Carl D. Perkins Vocational Education Act: Economic Development Issues," discusses the problem of providing students with "marketable skills" in great detail. The problem he identifies is one of definition. In addition to the problem of having to predict future labor markets, he comments that, "marketability is highly idiosyncratic."

While placements have been the traditional measure of the effective use of funds distributed through government programs, I am concerned that they might become the primary measure. If our later assumptions about the need for a flexible labor force and the rapid changes in labor market requirements are accurate, then placements become much less important than retention in the workplace over time, or even continued employment over time.

Using initial placement as the sole measure provides no indicator of what workplace practitioners (training and development professionals in industry) refer to as "*transfer of learning*". (This concept should *not* be confused with that of transferable abilities across jobs, which is more commonly referred to as "cross-training.") That is, can the skills and knowledge acquired in the classroom be applied in the real work setting effectively?

Assessment of the effectiveness of vocational education should go beyond asking whether or not students are supplied with "marketable" skills, or even whether or not students graduate with skills employers seek. "Effectiveness" should be measured more longitudinally in terms of the actual utility of skills and knowledge acquired in the workplace.

There is an implication here of the need for new methodologies for evaluation of learning and the appropriateness of curriculum designs. These evaluation methodologies exist in the workplace but are not frequently used by educational institutions (e.g., training cost/benefit analysis and return-on-training-investment methodologies). I would suggest that the National Assessment focus some attention on the evaluation methodologies currently in use in both educational institutions and the workplace in order to generate best practices information.

> In order to be effective, vocational education programs must be able to accurately assess (predict) labor market needs.

Patricia Flynn's paper, "Vocational Education Policy and Economic Development: Balancing Short-Term and Long-Term Needs," suggests that vocational education institutions need to be aware of the production life cycle's effect on training needs and prepare a variety of programs, each aimed at the labor market demands associated with different points in the cycle. She even provides schematic information about the nature and level of skills needed in each phase of the cycle. This requires the existence of a valid characterization of the labor market needs of a specific geographic location in specified time frames. As Flynn states:

> Vocational education can facilitate structural change and local economic development by adapting to the diverse and evolving skill needs of an area. . . . While the range of program possibilities is extensive, the overall vocational education package in an area should be designed to evolve with production of life cycles, recognizing innovations and developments in technologies and products as signals to future skill needs.

The assumption, then, is that institutions that are astute enough to accurately assess community needs will be able to provide training targeted to those needs and therefore provide students with employable skills. As long as the community continues to monitor needs, an appropriate labor market pool will be provided to the community, and the individual employee should be able to retain his position by accessing continuing education programs that would change with changing market needs.

Although I see this as a more complete approach than equating marketability with "effectiveness," it places an extremely heavy burden on the educational institution to continually assess the needs of its market in a highly targeted fashion. As Flynn points out, while doing so, they must also avoid other pitfalls:

> Vocational educators must guard against being so 'labor market responsive' as to undermine longer-term development of workers and of the local economy.

and:

> Vocational education policies need to address not only the existence of skill shortages but also such issues as how fast scarcities can be met and at what risk of eventually stimulating surpluses.

and:

> Vocational education should focus on providing skills that are transferable among different workplaces, guarding against providing training that is extremely narrow in scope or designed for any one employer's specific needs.

I certainly agree with the spirit and direction of these admonitions, but the job of accurate assessment begins to look more and more formidable: vocational education programs must be targeted to the needs of the market place (as indicated by an assessment of the predominant local phase in the production cycle), must be broad enough to provide a skills base for economic expansion, must be timed in such a way as not to provoke a skills "glut," and must be broad enough in scope to provide for community cross-training.

In my opinion, the problems entailed in fulfilling these requirements can only be addressed by confronting three other assumptions:

(1) A more flexible/adaptable work force is needed in order to maintain economic growth/development in a relatively unpredictable/rapidly changing labor market.

(2) There is an underlying "cycle time" problem that requires that training needs be assessed, and programs be designed and delivered before the labor market takes a new direction. Failure to achieve this results in students trained for nonexistent jobs. The vocational education program then fails to be "effective" on the basis of lack of job placement of students upon program completion.

(3) Some subject matter(s) of vocational education is (are) most effectively delivered by traditional educational institutions. Other portions are best provided by employers in the workplace. It is not currently known which method of dividing (or even defining) subject matter(s) provides the most beneficial effect on economic development.

It will be helpful to examine each of these assumptions individually.

The Flexible/Adaptable Work Force

The Stevens paper and most current legislation and programs place emphasis on the need for the preparation of a flexible/adaptable work force by vocational education in order to contribute to economic development. There appear to be three approaches to meeting this need:

(1) creating a broad pool of diverse skills in the work force (shotgun approach), or

(2) providing workers with versatile skills (cross-training), or

(3) providing continuing access to acquisition of new skills (retraining).

The first approach certainly appears to be the least cost effective and carries with it the probability of continued unemployment, lack of needed skills in the work force, and gluts in other skill areas. The second approach entails some of the same difficulties as the "shotgun" approach, since it is essentially "shotgunning" on an individual level. It would require relearning relatively unused skills and longer training cycles, in addition to lack of cost effectiveness.

The third approach, which is represented in Flynn's work, requires accurate targeting of market needs and close ties between business and education. While obviously the most cost effective, it suffers from the requirement for massive data gathering and monitoring on the part of educational institutions and the concomitant problem of "cycle time."

It must be noted that these "approaches" are prescriptive statements, while the focus of this Assessment is apparently, descriptive. However, these prescriptive statements appear to form the criteria against which current practice may be judged. I am concerned that in formulating the research question on whether or not vocational education has provided a flexible/adaptable work force, the question of whether or not vocational education institutions and practices are sufficiently flexible and adaptable will be ignored.

My comments at this point center on what the papers presented did not ask. For example, Flynn asks whether or not vocational education has been responsive to changing labor market needs, and as a subquestion asks whether or not, and how, vocational education currently monitors those needs. These are extremely important questions that focus on information processing.

I believe there is a logically prior question that needs to be asked regarding information acquisition. Are there sufficiently current data bases available to vocational education institutions, on a local level, to allow the precise targeting described? Do vocational education institutions have the skills, knowledge, manpower, and funding available to carry out such studies on a continuous basis?

I mention this to raise a caution. It is possible that focusing on whether or not vocational institutions respond to current employment needs will lead to the assumption that they "choose," through their stated business strategies, to respond or not respond. It may, in fact, be that these institutions are precluded from responding by the lack of access to critical information.

The Cycle Time Problem

Whether vocational education institutions in local areas have sufficient instructional/curriculum design skills and manpower available to respond to labor market needs is a separate question that also appears unasked in the papers. An important aspect of this question is that of cycle time.

Cycle time can be characterized as the time necessary to identify market needs and design and deliver curriculum in order to meet identified labor market needs. If the cycle time is too short, skills are offered in the market place before they are needed, resulting in lack of employability and the need for later retraining due to loss of skills over time. If the cycle time is too long, the market need occurs before the educational institution can respond.

The assumption made in the papers appears to be that if information flow about labor market needs could be established, vocational education institutions would then be able to respond. This is especially emphasized in the Flynn paper, while Stevens discusses the difficulties of determining the needs of the current versus future work force. He sees the problem as one of a trade-off between investing in "resiliency" (training for future skill needs) or training for the current market.

Three questions arise from this assumption:

(1) Is the vocational education institution the most effective target for this information flow?

(2) Are vocational education institutions' resources best used in meeting short or long cycle needs?

(3) Does the vocational education institution have the capability to respond in a manner that meets the cycle time demands once the flow is established?

The first question is raised since, as is evident in Flynn's paper, the information gathering activity is a substantial one. I would suggest that since it is the employer who is the first source of information and must respond to economic demands—the demands of the market place—employer-based training is the most likely locus of labor market information.

With regard to question 2, Flynn suggests that short cycle training needs will, of necessity, be met by employers. The transfer of that training to educational institutions should only occur after a skill has become established as a consistent need over time.

Perhaps because both authors are economists, neither paper focuses on the capabilities of educational institutions to respond (question 3). While I recognize that one focus of the Assessment is to be on vocational education and economic development, there will be no effective relationship between the two where there are ineffective or inappropriate instructional technologies.

Employer-based training has tended to focus on smaller "blocks" (modules) of learning than those of traditional education institutions, simply because employer-based training is designed in order to respond to cycle time demands where educational institutions base learning segment size on arbitrarily selected schedule structures (e.g., quarters, semesters, two-year programs, four-year programs, etc.). Employer-based training is more likely to be structured around the minimum time needed to acquire competency.

The Question of Subject Matter

The questions asked in these papers center on the cycle time question and ignore the question of the appropriateness of the instructional strategies used. In other words, the assumption is made that an effective relationship between vocational education and economic development can be achieved by determining the subject matters that need to be taught in order to match labor market needs. I strongly suggest that along with subject matter, instructional and evaluation strategies must also be designed to meet the needs of the labor market.

The instructional technology most successfully employed in the workplace is competency-based, "criterion-referenced" instruction. That is, the desired outcomes of learning are performances on the job, rather than the ability to demonstrate acquisition of cognitive information. As a result, evaluation in employer-based training focuses on ability to perform on the job, rather than the paper-and-pencil measures more common in educational institutions.

In part, this technology has evolved out of the necessities of the workplace. If an employer is willing to make an investment in training and development, return on that training is expected as with any other sort of investment. Return can only be assessed in terms of performance-based changes that are measured in increased productivity (e.g., increased effectiveness or efficiency, reductions in rework, reductions in scrap, etc.).

The employer-based training practitioner has had to focus training efforts on the production of results--improved performances. This has had the effect of going beyond the classroom to influence changes in behavior through coaching, structured on-the-job training, or the use of job aids.

In effect, I am suggesting that equating vocational education with subject matter, and specifically with the subject matter offered in vocational education institutions, is too narrow a definition of the field. Some research questions generated by approaching the relationship between vocational education and economic development in this way are:

- What is the nature of current instructional practice within the field of employer-based training?
- What is the impact of employer-based training practices on economic development?
- How do these practices compare with practices normally used within vocational education institutions?
- Which practices are most effective in meeting economic development needs (e.g., increasing productivity, increasing flexibility/adaptability in the work force, or meeting the cycle time demands)? In which locations do such practices reside most effectively?
- How might such training technologies be transferred from one delivery organization to another if such transfer is appropriate?

Summary

It may be that rather than flexible and adaptable workers, we need flexible and adaptable educational institutions. While placing taxing requirements on vocational education, Flynn seems to come a bit closer to the mark. In order to retain workers in the workplace and prevent the need to provide for "displaced" workers, continuing education must be provided.

The key is that this education cannot be done all at once, nor can it be done all in the same location. A major difficulty I have with the papers as submitted is the lack of recognition of the powerful, large, and active force of training in the workplace. There was, in my opinion, a substantial misreading of employer-based training. As Stevens comments:

> The underinvestment phenomenon occurs because the agents in question are unable to control the circumstances that are necessary to assure that a return on the investment will be forthcoming. The major constraint here is mobility.

Flynn suggests that "as employers cannot capture the return on investments in general skills, they prefer to shift the general training out of the factory and into the schools, where it will be paid for by the government or by individual students." Furthermore, she states that "scientists and engineers determine new occupational requirements at the workplace on a trial and error basis."

Finally, Flynn asserts that:

> ". . . as a technology develops and as demands for new skills expand, skills become more generalized and transferable among employers. Training can then be formalized and should be transferred to educational institutions."

Stevens' statement about employer under-investment is simply not accurate. According to recent figures published by the American Society for Training and Development (ASTD), which represents workplace practitioners, yearly expenditures by employers for training and development amount to $210 billion dollars per year ($180 billion in on-the-job training and $30 billion on formal classroom activities). On the other hand, funding for all public educational institutions equals $230 billion dollars per year ($144 billion for elementary and secondary and $94 billion for postsecondary education). ASTD's 50,000 national and local members represent only one-sixth of the estimated total number of practitioners in the field of training and development. Thus, estimates of total employer-based training costs are probably understated. Even so, this is a substantial amount of activity by any estimation and represents a significant financial commitment on the part of employers to workplace learning.

Flynn's comments seem, in general, correct but may promulgate some misconceptions. In the first statement quoted, it may be inappropriate to assert that employers cannot capture return on training investment. While the practice is still not widespread, accounting technologies for capturing return-on-training investment exist and have been in use for some 20 years. The history of human resources accounting as a field of investigation is not short, and many applications have been made. I would suggest that employers use "generic" or basic skills vocational education programs, in fact, because they are both more cost effective (little or no development costs) and because industrial training practitioners generally have substantial workloads in responding to the demands of new technology.

I would also like to indicate that engineers and scientists are not normally the individuals responsible for the specification of occupational requirements. Job and task analyses, while previously (as suggested) in the purview of the industrial engineer, have moved firmly into the job descriptions of the nearly 300,000 degreed, professional training and development specialists.

The suggestion in the last quote from Flynn's paper is that what goes on in the workplace is something "less formal" than the business of vocational education institutions. If this is simply to suggest that more training goes on "on the job" than in the classroom, it is clear from the yearly spending statistics that this is true. However, I would ike to point out that as of 1985, 18 corporations were offering college-level degree programs. By 1988, at least 13 more corporations will be operating their own colleges.[2] The dividing line between "formal and "informal" becomes thin very quickly.

My point is that vocational education, which can be defined simply as "education for work," takes place in a much broader range of settings and contexts, and with a much more substantial methodological and professional base, than is represented in the two papers submitted. This fact, and the question of dividing responsibility for training between the educational institutions and the workplace, are central in realistically evaluating the relationship between vocational education and economic development.

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[2] American Society for Training and Development. (1986). Serving the new corporation. Alexandria, VA: Author.

References

Flynn, P. M. (1986, September). Vocational education policy and economic development: Balancing short-term and long-term needs. Prepared for the National Assessment of Vocational Education Design Conference. Washington, DC: U.S. Department of Education.

American Society for Training and Development. (1986). Serving the new corporation (Bulletin). Alexandria, VA: Author.

Stevens, D. W. (1986, September). Assessing the impact of the Carl D. Perkins Vocational Education Act: Economic development issues. Prepared for the National Assessment of Vocational Education Design Conference. Washington, DC: U.S. Department of Education.

IV. STATE AND LOCAL GOVERNANCE AND COORDINATION

Policy Issues in the Governance of Vocational Education

John E. S. Lawrence

Coordination of Vocational Education and Manpower Training Programs

Paul E. Peterson
Barry G. Rabe

Comments on State and Local Governance and Coordination

Robert P. Sorensen

POLICY ISSUES IN THE GOVERNANCE OF VOCATIONAL EDUCATION

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Introduction

Vocational education has always been pragmatically focused on the relationship between the classroom and the workplace. It is therefore not surprising that the field finds itself today in a period of critical transition. On the one hand, educational processes are unstable and under fire, with teachers and administrators required to accomplish more at less cost, in the face of rising consumer expectations and political pressure. On the other hand, the skills demands of the workplace are increasing in unprecedented fashion, with new technologies changing occupational structure and characteristics, and market competition exerting strong influence on whole sectors of industry. Because of its conceptual location between these two currently quite volatile components of the national economic system, vocational education should be at the forefront of governmental strategies for future human resource development. Instead, vocational education still continues to be ignored in many of the recent studies calling for educational reform. This shortcoming has been called the Achilles' heel of the resurgence of interest in education in America (Tucker, 1986).

The National Assessment of Vocational Education mandated under the 1984 Carl Perkins Act can offset this notable imbalance. However, to be useful in guiding future national policy in human resource development, the National Assessment must be willing to address fundamental policy questions in ways similar to recent study commissions and reports dealing with the dimensions of academic excellence. In particular, basic structural issues underlying the delivery of vocational education should be examined, such as state/local governance and administration. Because the center of gravity in educational policy is shifting perceptibly from federal to state and local levels, the process by which federal vocational policy is mediated by state and local governance and administration of vocational education must be reappraised. Most importantly, the role of postsecondary institutions in supplementing the technical skills of those who have completed secondary school must be clearly defined in light of contemporary experience.

Perceptions that federal policy shortchanges postsecondary contributions to vocational education, or that structural requirements such as the 'sole state agency' requirement in federal law inhibit effective programmatic articulation, should not be disregarded. In short, the Assessment should consist of more than just the analysis of 'input' factors (student enrollment, funding levels, teacher qualifications, access issues) and evaluation of outcomes (follow-up, placement ratios, earnings and/or estimated job competencies). It is essential that both process and contextual factors affecting the organization, structure, and delivery of vocational education be reviewed, and federal policy in these areas be reevaluated.

While not explicitly identified in the congressional charge to the National Asessment, governance issues permeate current discussions on vocational education policy. Of special concern in many states is the growing focus on postsecondary vocational education, and the need for improved coordination between secondary and postsecondary program planning. Accordingly, this paper looks within the context of the ongoing National Assessment at issues in state and local governance of vocational education, with an emphasis on the emerging salience of the administration of postsecondary programs. It is suggested that, because of the swiftly shifting impacts of technology, and consequently greater legislative, executive, and consumer expectations of education as a whole, new demands are being made on traditional educational structures.

This paper, therefore, argues for the importance of the concept of governance in the actualization of federal intent, reviews what is known of state and local governance in vocational education, especially in regard to recent postsecondary initiatives, draws some conclusions from existing data, and finally discusses how the study might usefully address elements in current federal policy that inhibit or facilitate successful administration of vocational education programs.

The Importance of Governance

The subject of governance is one of the least accessible, yet most critical, components of what is termed the vocational education system today. Issues of administration have been of continuing concern to policymakers in the past (Gentry, 1979b; Galambos, 1984). In the immediate future, however, three aspects are likely to be especially important for vocational education from the point of view of national policy: composition of the state/local vocational education system and how that structure relates to the implementation of federal vocational education priorities; ways in which states accommodate to the growing emphasis on postsecondary vocational education, especially in view of the 'sole state agency' concept in the legislation; and the extent of overall coordination in national human resource development efforts, particularly as these relate to articulation between secondary and postsecondary programs, as well as to employment and productivity in the work force.

Governance and the Implementation of Federal Policy

Governance at the state level is relevant to federal policy considerations in two ways. State and local administrations form the basic filtering mechanism through which federal initiatives toward specific target groups or skills acquisition requirements become translated to the operational program level. However, state structures also reflect federal policy and prescription in important ways, such as accommodating to the sole state agency mandate, and forming advisory committees to federal specifications. It is not clear whether subfederal vocational governance disproportionately reflects the impact of federal vocational education legislation, or has grown increasingly resistant to federally imposed priorities. Because of customary deference to lower level autonomies in educational administration, top-down policy implementation is inevitably the result of selective filtering at each level.

Acknowledging this fact is one thing. Shaping successful federal policy initiatives to survive such filtering is another. Thus, for example, when detailed planning prescriptions (such as those pertaining to the Vocational Education Data System (VEDS) or State Occupational Information Coordinating Committees (SOICC) in the 1976 Amendments to the Vocational Education Act) were specified in the legislation, they made sense as an abstract design. The rationale behind the legislative intent in both those examples lay in the degree of standardization inherent in national reporting or data systems, with all of the advantages of standardized procedures and definitions, and potentially comparable results. But unless these are also state and local priorities, the results will be mere compliance.

There is some disagreement as to whether the mediating process by state and local administrations is in fact significant. Woodruff and his associates (1978) concluded that "the effectiveness of Federal legislation in achieving its intended objectives is significantly affected by. . . characteristics of the State and local agencies responsible for the administration of federal funds and programs." At about the same time, however, Kirst (1979) suggested that state governance structures do not make much difference in meeting federal objectives.

Evidence exists (in congressional hearings, as well as in study reports such as Drewes and Katz, 1975) of intractability in state vocational education administrations regarding federal policy under the 1963 Vocational Education Act (VEA). From the federal perspective, state vocational education agencies were the second element in a three-tiered national chain constituting the federal-to-local system of vocational education. While states may not necessarily have seen it this way, they accommodated superficially, both in function and structure, to meet statutory VEA requirements. This superficiality was demonstrated, by the documentation, in considerable detail in the Drewes/Katz study, of the lack of a relationship between instructional programs being offered and the occupations in which state data demonstrated or forecast significant demand. This situation persisted despite federal requirements for the use of such data in state plans, and the existence of explicit memoranda of agreement between employment services and vocational education agencies to provide such data. Thus, in this case, federal policy for interagency cooperation in providing information for state and local decisionmaking was not working.

A key state governance function relative to the VEA was to disburse federal funds according to the law. Although the federal dollar contribution to vocational education has been relatively minor, associated matching and maintenance of effort provisions permitted federal exertion of control over more than the actual dollar share implies. States nevertheless retained considerable autonomy and discretion despite detailed federal prescriptions as to how federal dollars should be spent. Inconsistencies have inevitably resulted between federal policy and state and local practices, in some measure due to ambiguities in the law. For example, states could use allocation formulas for federal funds under the 1976 Amendments by assigning differential weights to achieve almost any distributional pattern to accommodate their own agendas (David, 1981). Consequently, state priorities could supercede, and in some cases be incongruent with, federal priorities. The Vocational Education Act, for example, explicitly prohibited funds from being distributed solely on the basis of enrollments, preferring population as the index for relative share. Yet within states, enrollment virtually drove the distribution of all federal vocational education funds.

Although states have maintained basic autonomy and discretion in the administration of vocational education (despite what has often been viewed as overprescription from the federal level), paradoxically state agencies continue structurally to reflect the impact of federal law. The sole state agency requirement is one such instance. Since the Smith-Hughes Act in 1917, federal legislation has required states to designate a state board for purposes of receipt of and accountability for federal vocational education funds. The original language stated that the board should have "all necessary power to cooperate. . . with the [then] Federal Board of Vocational Education in the administration" of the Act (Sec. 5).

In 1963, VEA specified that the state board created in 1917 be designated as the "sole agency for administration of the State plan, or for the supervision of the administration thereof by local education agencies" (Sec. 5.a.1). Thereafter, although the sole state agency concept has been continued in federal law, it has not been restricted to the 1917 structure, but rather has since been defined in each successive piece of legislation as "a State board designated or created by State law." The distinction between the 1963 retrospection in terms of structure and the more recent accommodation to state diversity is important. However, the earlier pattern of governance of vocational education by secondary educational administrations has tended to prevail. Vocational education today reflects this logistic in several ways. More than twice as many students enroll in secondary vocational education as at the postsecondary level, whatever definition of enrollment is used (David, 1980). Nearly two-thirds of total expenditures for vocational education are spent on secondary programs. Average expenditures per student in 1980-81 were $522 for secondary, $426 for postsecondary. In particular, while 62 percent of state/local expenditures for vocational education are for secondary programs, 80 percent of federal expenditures are at the secondary level (Hoachlander, 1985).

The sole agency concept has been continued in P. L. 98-524 despite postsecondary opposition. Federal requirements for State Councils, the state planning process, the segmentation of vocational education into program areas under federal definition, as well as federally defined evaluative and occupational data provisions, all have structural consequences at both the state and local levels. In addition, consistency in the federal requirements over time has added legitimacy to existing state structures, through de facto administrative mechanisms, as well as de jure provisions in complementary state legislation. In addition, continued affirmation of vocational education in federal law since 1917 has ensured survival of the resultant state agency structure (particularly at the secondary level), which has proved highly resistant to change.

Some observers have noted the relative lack of flexibility in state vocational education administration, leading to a degree of isolation from other components of the educational system. Kirst documents the closed-system operational style and independence accorded vocational educators in state educational agencies, and the relative ineffectuality of federal incentives or sanctions in ensuring compliance with federal intent. A key factor in the impervious quality of vocational education governance has been the notable similarity in background, work experiences, and patterns of socialization of state vocational education administrators (Kirst, p. 53). Review of individual state staffs endorses this perception of administrators as "themselves products of vocational education, educated, trained and experienced as vocational education classroom or shop teachers. . . products of the system whose role is to promote its continuous expansion, not to evaluate its direction" (Patton, 1983). This has tended to result in a separation in function and attitude from not only other state educational administrators but also from local educators.

At the local level, structural diversity has inhibited the establishment of clear associations between organization and program function in terms of effectiveness of federal law. Woodruff originally pursued the question of relating characteristics of local institutional structure to program effectiveness, but withdrew in the face of lack of data and variability in types of institutions (1978). However, it is generally assumed that local structural characteristics do make a difference in the quality of program delivery at the local level (Hoachlander, 1985).

Thus state and local vocational education systems are complex and various organizational aggregates, responding differentially to the necessity for compliance with federal mandates and to the need to accommodate regional as well as factional political agendas. Although state structure may have been less critical to the implementation of federal policy in the past, several factors are working to alter the status quo. Major forces for change are impacting on vocational education. Some are federal, but the most important ones are at the state and local levels. P. L. 98-524 makes explicit the emphasis on local decisionmaking "with a minimum of Federal interference," as well as continued encouragement for involvement of the private sector. Sharpened competition for public monies, sectoral employment shifts, the impact of new technologies on traditional industries, and rising consumer awareness of the problems in education are being expressed in legislative initiatives in several states.

Issues in Postsecondary Vocational Education Governance

For a number of reasons, state legislatures are reappraising vocational education governance, particularly at the postsecondary level. In light of the extraordinary economic, social and political pressures for reform in education, vocational education is seen as a key resource in state and local economic development. As a consequence, governance "of multiple state activities related to vocational, technical and post-secondary occupational programs is a key or emerging issue in as many as one half of our states" (Payne & Carter, 1984). Cited reasons include new policy awareness of the linkages between education and economic development, private sector concerns over the lack of responsiveness in education and training systems to the needs of business and industry, federal mandates to coordinate efforts in education and job training, and current fiscal conservatism necessitating resolution of lingering turf battles over issues of program duplication and overlap. While secondary educational systems are experiencing considerable pressure to reform, with attendant consequences for vocational education, it is at the postsecondary level that the direct connection with occupational employment is more easily made and the legislative focus most intense.

The National Commission for Employment Policy (1981) concluded that vocational education yields greater "payoff" at the postsecondary level, with training more clearly associated with economic benefits in terms of employment and earnings, particularly for disadvantaged individuals. A survey of state legislatures identified 17 states in which postsecondary governance structures were under scrutiny (Education Commission of the States, 1982). A recent National Center for Research in Vocational Education (NCRVE) study of 13 state legislatures concluded that there is a growing feeling among some legislators that "real vocational education in this day and age belongs more at the postsecondary than at the high school level." The report also underscores the legislative perception that postsecondary is the growth area for vocational education (Field, 1984).

Reasons for this perception are complex, and vary from state to state, as well as within states. In general, however, regional economic stress is heightening the visibility of postsecondary vocational education on all sides. Employers from large firms with their own occupationally specific training resources see public institutions as the source of basic employability skills. Smaller employers, who make up the bulk of employing establishments in the U.S., look to public postsecondary vocational institutions as providers of more occupationally targeted skills in the available work force. Students, increasingly adult and part-time, expect postsecondary subbaccalaureate investments to prepare them for improved employment opportunities at relatively low cost. The trend is toward increased schooling beyond high school in the majority of the working age population. Secondary and university administrators respectively regard postsecondary vocational education as competition for scarce human and fiscal resources. State legislators, in turn, while tending to distrust effective local liaisons between business and postsecondary vocational schools and colleges, nevertheless recognize the expensive but essential contribution of these institutions to local economies.

Consequently, postsecondary vocational education has been targeted in a number of states as central in key policy issues such as displaced worker strategies, high technology programs, and areas with critical skill shortages. With the attention has come growing scrutiny of the autonomy formerly enjoyed by local institutions. Also under reexamination is the sole state agency requirement as it affects postsecondary vocational education administration. In view of proportionally increasing postsecondary enrollments, and the costs of occupationally specific programs in areas of new technology, states have wrestled with the historically secondary school focus of the sole state agency provision. For example, in its move to establish a new postsecondary state board for vocational education, one state advisory council expressed its assessment of the sole state agency concept this way:

> [T]he federal requirements establish the score-keeping process for the game. They do not create a set of rules by which the game must be played. The United States Congress has stated that vocational programs are for all those who want, need and can benefit but it sets aside its appropriations, not for the use of all, but for special groups. It has created a large number of potential complainants and therefore sees the need for a defendant, i.e., the sole state agency. Nonetheless, the sole state agency for vocational education should serve more than the

> needs of. . . Congress (Minnesota State Advisory Council for Vocational Education, 1983).

Testimony that recommended amendment or elimination of the sole state agency provision was presented in congressional hearings by higher education constituencies prior to passage of P. L. 98-524. Other suggestions included increased postsecondary set-asides and permitting dollars to follow students. These proposals, it was argued, would allow states flexibility to select their own administrative structures for optimal distribution of federal funds and program implementation. Issues such as unnecessary duplication between "vocational" and "occupational" or "technical" education, perceived inequities in funding for occupationally specific programs at the postsecondary level and rekindled interest in cost efficiencies potentially realizable through area vocational training centers are straining the traditionally superordinate position of secondary sole state agencies. In a sense, the lack of a "captive audience" in postsecondary programs necessitates sharper competition for both resources and students, since enrollments in most cases drive funding.

On the other side of the issue, of course, is the different but no less intense pressures on secondary vocational education resulting from stricter academic requirements leading to reduced vocational enrollments. The necessity for pragmatic educational alternatives to academic curricula for high school students continues to be a strongly stated concern by secondary vocational educators. Accordingly, where removing the sole state agency provision from federal legislation is perceived as a threat to the continued public support of secondary vocational education, it is understandably resisted. Arguments for the sole state agency concept include: (1) the existence of a single accountable administrative unit at the state level for controlling the flow of federal vocational education funds; (2) the tenure and relative success of the structure; and (3) the organizational advantages of having one agency coordinate vocational education, particularly in the current environment of stress and change.

Articulation and Coordination

Articulation within the vocational education system, and coordination among the various agencies and institutions responsible for education and training, are becoming major priorities (Galambos, 1984). Articulation can be defined as formal procedural arrangements between institutions relative to shared responsibilities. Although excellent in some exemplary cases, these relationships are often highly imperfect, with associated costs both economically and in terms of credibility. According to one view, the assumption is that where governance structures are noncompetitive and well aligned, with specific roles outlined that are compatible, articulation will be enhanced (Bushnell, 1977). The problem is that few situations fit those requirements, more likely representing competitive, relatively incompatible administrative positions.

Students are quick to note inequities, for example, in acceptability of credit from one institution to another, despite comparable levels of instruction and programmatic content. This problem can be reduced by such strategies as interlocking governance structures, opening up the assumptions underlying formal articulation agreements, introducing such agreements where they do not exist, and focusing on the curriculum as the basic unit of articulation. Of the several articulation models currently being implemented, the "2 + 2" programs (formal, cross-institutionalized administrative integration of the last two years of high school and the first two years of college) are viewed as particularly promising. The term is applied generically to several discrete models (Long, 1986). While the approach makes good intuitive sense, there is little conclusive evidence at this time concerning outcomes, program quality, or structural effectiveness of these initiatives.

Coordination across various agencies involved in aspects of human resource development remains a major governance problem. There is an increasing awareness of the need to bring coherence to governance of the overall education and training system. At the state level, the number of separate agencies with statutory responsibilities for skills training can run into double figures. Lack of a comprehensive strategy for human resource development at either the state or federal level leads to unwarranted duplication and excess costs, as well as wide variability in program quality. In addition to education and training program delivery agencies, there are others serving as information providers for the vocational education policy decisionmaking process.

In Texas, for example, our study found that statutory responsibility for program approval and evaluation, funding, and curriculum development in vocational/occupational education and training was dispersed across 16 agencies and 36 certification boards or commissions (Research Triangle Institute, 1982).

It is unlikely that Texas is at all unique in this regard, in view of the incremental growth of vocational education in recent years. Woodruff found that a majority of states made provisions for agency interaction "to promote coordinated development of vocational education in institutions operating under the authority of multiple agencies." However, he reported that these provisions had little in common across the states, appeared to be independent of state characteristics such as industrialization or urbanization, and could be assumed to be the result primarily of political factors.

Both the Job Training Partnership Act (JTPA, P. L. 97-300) and the Perkins Act call for coordination between education and job training providers. Federal funds are specifically set aside for this purpose, and there are numerous cross references between the two federal laws to encourage cross-stitching where possible at the level of program delivery. In the Perkins Act, for example, interagency cooperation is frequently cited both implicitly and explicitly. Throughout most sections, the legislation emphasizes the necessity for information on employment opportunities and charges SOICCs with implementing the necessary information systems. However, since SOICCs are dependent in many ways on other state agencies (e.g., Employment Services) that collect/generate occupational data, the resultant committee function is often trapped in a web of bureaucratic interrelationships that gridlocks policy information flow. While there is some recent evidence that occupational projections are useful in education and training decisionmaking (Lawrence and Bergman, 1984), the effectiveness of the SOICCs in their essential role as policy information brokers has not been evaluated.

Federal funds are directed toward coordination between vocational education and JTPA-supported programs. Areas in which the two pieces of legislation are explicitly cross-stitched, other than the occupational information sharing discussed above, include dislocated worker programs, shared council membership, and coterminous planning periods. In view of the several complementarities between the two Acts, and the intransigence of the human resources problems (high youth and minority unemployment, widening skills gaps between employed and unemployed) that both inevitably are addressing, it is imperative that this constituency relationship be closely monitored. Not only do needless overlap and duplication squander dollars we can ill afford to waste, but an opportunity to forge important coalitions at the state and local levels towards concerted human resources policy will be lost. The challenge to those implementing federal vocational education policy and administering state and local programs alike is to promote effective delivery systems to meet local needs within the context of an overall human resource development strategy involving all relevant state agencies. Such a coordinated approach is severely inhibited by the lack of a comprehensive human resource development policy for the nation.

So, although structures of decisionmaking at the state and local levels may have been relatively durable in the past, the signs are that obsolescence in vocational education agency organization is being critically reappraised. A receding federal presence is leaving states and localities with primary responsibility for human resource development. Along with some increased flexibility and freedom, new demands are being made on state governments to weigh competing priorities in the allocation of public funds. The growth of new political centers in education is moving educational decisionmaking out of the hands of educators, for example, into state legislative committees. Rather than concentrating primarily on compliance with federal regulations, therefore, vocational education planning will have to identify realistic immediate and long-term objectives for state and local determination of the appropriate mix of program services required to meet education and training needs. Acountability is becoming more directly lodged with front-line program administrators as the momentum for policy initiatives shifts from Washington to state capitals. In view of these shifts in policy agendas and power centers, it is essential to understand the constituencies and processes involved in these organizational adjustments, as well as the changing economic and social context in which vocational education governance and subfederal policy formulation processes are now required to operate.

Research on Governance

Vocational education governance has been the subject of a few earlier research studies. These represent a useful resource for the Assessment, particularly when the results are synthesized. A preliminary attempt at synthesis follows, with some suggested hypotheses for further investigation.

The term "governance" is loosely synonymous with "government," and is seldom specifically defined. When applied to administrative structure, governance implies organizational configurations directed toward administrative (mostly policy and fiscal) control. In public vocational education, this typically has been interpreted to mean the structure of public agencies (state and local education boards and departments of education) with statutory responsibility for the administration of vocational education programs. In particular, statements about vocational education governance have focused on the "sole state agency" concept introduced into federal law since 1963, ostensibly to facilitate state administration of all federal funds for vocational education.

However, at the state level, this perspective focuses exclusively on the executive structure of governance and ignores the interactive, functional relationship between the legislative branch and the several executive agencies pivotal in the formulation of vocational education policy. Also excluded are complex interactions among the multiple constituencies involved in the vocational education enterprise, including public agencies, professional associations, unions, advocacy groups, private employers, and sometimes the courts.

For the purposes of this paper, a definition of governance is proposed that includes not only the traditional administrative structures (which are primarily oriented towards implementing policy) but also the broader policy formulation processes involving legislative as well as other public sector constituencies.

In view of the salience of governance to effective administration and control of vocational education, there have been surprisingly few national studies on this subject. Research is hamstrung by lack of clear definition of the topic, extensive variability between and even within states, and a shortage of objective data. "Outside," or so-called "objective," researchers find it difficult to comprehend subtleties in state-specific vocational education structures and procedures within normal study constraints of time and other resources. "Insiders" may know the system but lack objectivity. Accordingly, studies have concentrated on structural aspects of governance.

The Woodruff report (1978) looked at both state and local governance structures as part of a study sponsored by the U.S. Department of Education/Office of Planning, Budget and Evaluation (USOE/OPBE) to examine facility utilization in vocational education. As reported by Woodruff:

> When this study was initiated, it was expected that it would be possible to identify specific organizational characteristics, fiscal policies, and/or planning practices that could be correlated with the efficient utilization of vocational education facilities and resources. However . . . preliminary investigation of the availability of data regarding the organization and operating characteristics of the vocational education systems of the individual states revealed a serious gap in the available information about the Nation's vocational education system. Therefore the objectives of this study were adjusted. . .

As a result, the report confined itself largely to descriptive analyses of administrative structure, facilities utilization, and funding procedures.

Almost a decade later, this landmark study still stands as a thorough classification of state and local vocational education systems. The central finding remains:

> The vocational education systems of the 56 states and territories, while having generally similar objectives, are characterized by such a broad array of state, territorial and local agency governance structures, delivery systems and funding provisions as to make each virtually unique.

Organizational structures at the state level were classified by three categories: (1) state board types; (2) state agency responsibility for vocational education; and (3) state agency authority over local agencies. Seven state board types were identified. Table 1 summarizes the structures as reported by Woodruff. Only ten systems were overseen by independent state boards for vocational education. The majority of states/territories (n = 43) fall into the last two classifications (i.e., shared state board membership with other secondary or postsecondary boards).

Table 1

State Board Types 1978

Type and # of States/ Territories	Definition	States/ Territories
Type I N = 3	State Board for Vocational Education is independently constituted Board responsible for vocational education policy but without direct authority over state agencies; agencies responsible for implementing policy and supervision of institutions providing vocational education.	IN, WA, P.R.
Type II N = 1	State Board for Vocational Education is independently constituted Board responsible for vocational education policy with direct authority over state agency having responsibilities for policy implementation and supervision of institutions providing secondary vocational education.	OK
Type III N = 4	Same as II, but with authority over secondary and postsecondary vocational education.	DC, CO, KY, SD
Type IV N = 1	State Board for Vocational Education is independently constituted Board responsible for vocational education policy and serving as administrative agency for policy implementation and supervision of institutions providing vocational education at the postsecondary level.	WI
Type V N = 1	Same as IV, but with authority over secondary and postsecondary vocational education.	HI
Type VI N = 16	State Board for Vocational Education is constituted from the membership of another Board which has direct authority over one or more of the state agencies responsible for policy implementation and supervision of secondary vocational education.	AK, AZ, CA, CT, DE, IL, MD, MA, NE, NV, NJ, OH, SC, VT, VA, WY

Table 1
(Continued)

State Board Types 1978

Type and # of States/ Territories	Definition	States/ Territories
Type VII N = 27	Same as VI, but with authority over both secondary and postsecondary vocational education.	AL*, AR, FL, GA, ID, IA, KS, LA, ME, MI, MN, MS, MO, MT, NH, NM, NY, NC, ND, OR, PA, RI, TN, TX, UT, WV, V.I.

*Alabama was misclassified in Table 1-5, p. 13, of the Woodruff report.

Gentry (1979) used a different classification scheme, but came to essentially similar conclusions. He looked at structure as well as other characteristics such as state board selection, membership, length of service, prior positions of executive officers, and administrative functions performed. He categorized 48 of the 50 states into four broad governance types as follows:

- one agency for all levels of education (TYPE A)
- one agency for elementary and secondary schools including vocational education, and a state coordinating or governing agency for higher education (TYPE B)
- one agency for elementary and secondary schools, one agency for vocational education, and a state coordinating or governing agency for higher education (TYPE C), and
- one agency for elementary and secondary schools including vocational education, and governing boards for individual institutions of higher education with no statewide governing agency (TYPE D).

The two outliers were designated Type E—states with governance structures particularly unique to their own situation. The majority of states (31) were Type B, although the diversity across all states was acknowledged. Gentry demonstrated that vocational education administration and control were under the auspices of elementary and secondary boards and agencies in most cases. States having more than one agency with legal responsibility for components of the vocational education system were difficult to reconcile with the concept of "sole state agency."

These two studies have served as the standard reference works for vocational education governance structures at the state level since they were conducted. It is instructive to compare the two classification schemes in light of recent or planned changes in state structures. Table 2 outlines where the 50 states fall in both taxonomies. Upper case letters denote states in which structures have actually changed or in which change in governance structure is planned, according to a combination of sources that include personal communications, a survey by the National Association of State Directors of Vocational Education (Faddis, 1986), and a recent reexamination of the sole state agency concept (McKinney, 1986).

Table 2

State Governance Systems As Classified by State Boards (Woodruff, 1978) and State Agencies (Gentry, 1979)

Type and # of States (Woodruff)		Classification* (Woodruff)	States	Classification Type (Gentry)	
I	(N=2)	I	IN, WA***	C	(N=8)**
II	(N=1)	IIa	OK		
III	(N=3)	IIc	CO, KY***, SD***		
IV	(N=1)	IIIb	WI		
V	(N=1)	IIIc	HI***	E	(N=2)
VI	(N=16)	IVa	SC		
			AK, AZ, CA, CT, DE, IL, MD, MA, NV, NJ, OH, VA, WY	B	(N=13)
			VT, NE	D	(N=3)
VII	(N=26)	IVc	NM		
			AL, AR***, GA***, IA, KS, LA***, ME***, MN***, MS***, MO, MT***, NH***, NC, OR***, TN***, TX***, UT, WV	B	(N=18)
			FL***, ID, MI, NY, NY, RI, PA	A	(N=6)

*Actual classification used by Woodruff (1978), p. 11

**Includes North Dakota, not shown in table

***Denote actual or potential governance change since 1979 according to Faddis (1986)

These data suggest that the majority of states classified broadly by Gentry into Type B are in fact differentiated further by Woodruff's categories of state boards' authority over the agency having responsibility for secondary (Type IVa), as opposed to both secondary and postsecondary institutions (Type IVc). Further, noting the clustering of states in which governance has recently been an issue, it appears that the most change in governance systems has occurred in Gentry's Type C states, where vocational education has been governed under independently constituted boards, and in Woodruff's Type IVc, where the State Board responsibilities are assumed by an existing board with direct authority over both secondary and postsecondary education.

Assuming that change is oriented toward problem solution, it is possible to hypothesize two classes of recent problems associated with each structural type. First, in Type C structures, the relative autonomy of independent boards of vocational education may be offset by the increased salience afforded these boards. This suggests that states with well-established, independent boards for vocational education may fare better with this type of structure than those who select it in response to pressure to reorganize. The data appear at first sight to support this hypothesis, although further research will be needed to explore the question more carefully. Most of the states in this group have had independent boards for vocational education for at least 10 years. Several have recently conducted or are conducting studies that have not yet resulted in any move to the prevalent type of shared board governance (State Board of Education/State Board for Vocational Education), indicating some degree of satisfaction with the more independent structural model. In contrast, two of three states that have changed to independent boards within the last 10 years (Kentucky and Mississippi) within a short time (three years) changed back to shared board governance. The third state (Minnesota) created a separate postsecondary state board as the sole state agency in 1983.

Another problem surfaces in the Type IVc agencies with control over secondary and postsecondary vocational education. It can be hypothesized that some of the emerging changes in this type of governance structure represent a separation of postsecondary from secondary governance in vocational education. At least eight states in this category have made or are contemplating such structural changes. Georgia and Maine have recently created separate postsecondary boards for vocational education, although the sole state agency is still the State Board of Education in each state. In 1979, North Carolina established a separate State Board of Community Colleges, although the State Board of Education still remains the sole state agency. In 1983, Minnesota transferred responsibility for postsecondary and extension programs offered through area vocational technical institutes to a State Board for Vocational-Technical Education, which is now the sole state agency. Also in 1983, Tennessee transferred public postsecondary vocational education governance (of area vocational technical schools and technical institutes) from the State Board of Education to the State Board of Regents, which already had jurisdiction over regional universities and community colleges. Mississippi is considering legislation to place postsecondary vocational education under a separate board. Oregon is studying postsecondary governance structures, with changes anticipated. In 1985, Texas moved postsecondary vocational education from the State Board of Education to the Coordinating Board for Texas Colleges and Universities. One of the purposes of the Texas restructuring was to remove all occupationally specific education and training from secondary vocational education programs.

The Woodruff and Gentry studies are the only two recent attempts at comprehensive national research on state governance in vocational education. Local governance has had even less attention, one reason being that the large number of local delivery system structures lack uniformity. Sample data, therefore, do not lend themselves well to generalizability. Simple classification of the types of vocational institutions in the U.S. is difficult. Comparison, for example, of tabular presentations of total numbers of vocational education institutions and institutions offering vocational education programs, by type and state, from two different sources and for similar time periods exemplifies the variability in institutional type. Woodruff calculated a total of 7,543 vocational education institutions, excluding correctional facilities (1978). The National Center for Education Statistics, in its Digest of Education Statistics 1983-84, estimates the number of postsecondary and secondary institutions offering vocational education programs in 1978-79 to be over 27,000. David reported in 1981 that all the nation's public educational institutions offering vocational programs "probably numbered close to 20,000." Further complicating the classification of local structures is the finding that institutions may not always classify themselves in the same way that state agencies classify them (Woodruff, 1978). David (1980) identified seven different classes of institutions in which vocational education programs are offered. At the secondary level, programs are located in comprehensive high schools, vocational high schools, and secondary area vocational centers. At the postsecondary level, vocational education is offered by community colleges, technical institutes, postsecondary area vocational schools, and four year colleges/universities. Noncollegiate postsecondary schools, such as trade or cosmetology schools, as well as correspondence schools and correctional facilities, can also be included under the postsecondary category. Approximately two-thirds of the nation's institutions providing vocational education are at the secondary level.

In all states but Hawaii, the local education agency or school district is the administrative unit for public elementary and secondary education. Postsecondary institutional authority is independent in some states, or may be state authorized and admininistered by a local board, or directly state administered with no local board.

Postsecondary Governance in Selected States

Eight states identified in the previous section have made or are studying the possibility of changes in their postsecondary governance structures. In this section, aspects of two of these states' (Minnesota and North Carolina) current postsecondary systems are discussed as examples of recently changed governance systems.

In establishing policy for the state's vocational-technical delivery system, Minnesota identifed a need for significant change in postsecondary administration. The new initiatives were partly due to perceived structural deficiencies in the existing administrative organization, particularly in governance of the more than 30 campuses of the area vocational-technical institute (AVTI) system. Workplace shifts, employer needs, and the increasing age of students also indicated the need for a postsecondary system in tune with local and regional employment trends. The result was the creation of a new postsecondary State Board for Vocational-Technical Education, which succeeded the State Board of Education as the sole state agency on July 1, 1984. While it is still too early to evaluate fully the impacts of this change, advantages of the new system are perceived to be having one agency with the exclusive responsibility for advocacy and management of vocational-technical education and facilitating establishment of constructive working relationships with other key constituencies such as the legislature, other institutions and the private sector (Minnesota State Advisory Council for Vocational Education, 1983). Problems include a concurrent change in the funding process for AVTIs through adoption of a state formula for average cost funding, which ties state resources to mean average daily membership (ADM) instructional costs. The legislature, in adopting this procedure, pegged AVTIs along with all other postsecondary and higher education to the same formula, resulting in a $7.3 million shortfall for the 1984-85 biennium. In addition, the issue of state responsibility, authority, and control over AVTI districts continues to be problematic (Longanecker, 1985).

In North Carolina, a recent study of the community college system for the state legislature examined the governance structure of the 58 postsecondary subbaccalaureate institutions in the state subsequent to establishment of a separate postsecondary board in 1979 (Davis et al., 1986). Diffusion of authority was notable. Even though the State Board nominally oversees system functioning, statutory authority for financing, administering and modifying the system is formally distributed at the state level among the General Assembly, the State Board, and the State Department of Community Colleges. At the local level, authority is distributed among the Boards of Commissioners of the county or counties which constitute the administrative area of the institution, local boards of trustees, and the institutional presidents. In general in North Carolina, the system is working well, and has adapted quite successfully to the exigencies of differential economic growth in different areas of the state. Identified problems include the perceived lack of policy leverage of the State Board in relation to the General Assembly, concern over special appropriations favoring certain local institutions over others, and limited interactions between the State Board and other state educational policymaking institutions such as the State Board of Education and the University System Board of Governors. Importantly, however, while individual community orientation and local autonomy are fiercely guarded principles, "there is a uniform recognition . . . of the need for the federation of the institutions, for the locus of power and control in one body responsible for the educational operation of the system as a whole" (Davis et al., 1986).

Despite their separate governance systems, articulation between the public school system and the community colleges in North Carolina is facilitated by several factors (Cox et al., 1986). Competition for students is preempted by compulsory public school attendance and statutory barriers to infringement by the postsecondary institutions. Also, current legislation requires that one-third of the voting membership on postsecondary local boards be elected by the corresponding local secondary board. The North Carolina postsecondary system is exploring the 2 + 2 approach, although it has not been implemented widely enough yet to be fairly evaluated.

Conclusions

From the foregoing examination of issues in vocational education governance, it is possible to draw some conclusions in three general areas: (1) the relationship between governance structures and the implementation of federal policy; (2) the shift in emphasis towards postsecondary vocational education; and (3) the need for coordination in overall human resources strategies.

The single most evident conclusion is that not much is known about the effects of mediating governance structures on the ultimate delivery of vocational education at the local level. Despite useful earlier research, major questions remain unaddressed. The structural taxonomies in the studies reviewed above offer a good classificatory basis for subsequent research. Governance types are identified, the variety across states is documented, and some preliminary hypotheses generated. However, there are not enough studies to generalize from, and those that exist tend to be descriptive rather than analytic, for obvious reasons. From the evidence it should be clear that no one model of state or local governance is either preferred, or could usefully be recommended for states. Some states have improbable structures that work quite well because constituent agencies make them work, while others have tried and rejected new modes of governance within short periods of time. Each state must grapple with its own problems of organization in face of the multiple forces presently converging on vocational education. However, this is not to say the National Assessment should ignore the subject of governance. For the reasons already stated, state and local administrations are the executive instruments of federal policy in vocational education, with more freedom to act in the new federal legislation. So, while it is fruitless to pursue the perfect governance structure, the research agenda for the Assessment should address those factors in administrative structure and process that are likely to promote, or unduly obstruct, the implementation of federal policy. Especially important is the emerging role of state legislatures in educational policymaking.

It has been argued in this paper that the complexity of the vocational education enterprise, the arduousness of its basic objectives (requiring considerable organizational stamina), and the emphasis on growth since 1917 all have contributed to the considerable heterogeneity in state governance systems at this time. However, this complexity should not be permitted to mask clarity in expression of the federal mission, or effective definition of purposes for vocational education supported by federal funds. Moreover, there are discernible patterns in state governance identified by earlier research, such as continuance of the historical location of vocational education within the domain of secondary education, predominance of the shared board structure, and executive authority of state school officers. These patterns, and their general direction of change, need to be verified, and their consequences for federal policy determined.

It is important to reiterate that traditional state reliance on federal guidance for major policy initiatives in vocational education is being reappraised. In the past, some viewed Washington's role as catalytic, a relatively diminutive but potent force towards convergence among widely differing state goals, constituencies, and political agendas. Others saw the federal contribution more as a rudder—the small but vital component in a larger system that permitted states to steer their own efforts towards mutually desired ends such as equity or improved access for disadvantaged populations. However, in the current environment of fiscal conservatism and increased awareness of the importance of subbaccalaureate education and training for economic development, states are undoubtedly reevaluating their educational commitments. The Perkins Act, accompanied by different national policy perspectives, has resulted in greater expectations for states and localities to identify and respond to their constituent needs. In particular, withdrawal of federal support for maintenance of existing vocational education programs requires states and localities to provide the necessary fiscal support, or discontinue the programs. In addition, rural areas are experiencing serious economic difficulties in sectors such as agriculture and manufacturing. Federal formulas in the new law for funding for the disadvantaged tend to favor larger school systems and the needs of metropolitan areas. Consequently, new strains are being placed on old alliances.

Postsecondary vocational education is thrust by circumstances, both economic and political, into the limelight for the remainder of this decade. Pressures on local institutions to maintain responsiveness to employers' needs continue from the private sector. Local administrations are constrained by shifts from full-time to part-time enrollment, demands for technical training in the operation, servicing, and maintenance of increasingly complex equipment, sharpened competition for public monies, underpaid faculty, and heightened consumer awareness of educational issues. As a result, state legislatures perceive postsecondary vocational education as an important resource in future economic development. State-level administrations of postsecondary vocational education are faced with inherent tension between establishing the necessary standardization to achieve systemwide goals such as accountability and equity, and their strong commitment to local autonomy.

From the federal perspective, one issue that emerges as potentially inhibiting federal policy implementation with regard to postsecondary programs is the sole state agency requirement. There is some evidence of dissatisfaction with this administrative mandate at the postsecondary level. A useful function of the National Assessment will be to address this issue objectively, with a view to determining empirically the effects of the sole state agency concept on the delivery of postsecondary programs.

Finally, there is growing recognition of the need for a coherent national human resource development policy that will give overall direction to all education and training efforts in the public sector. In the absence of such a policy, federal guidance toward coordination consists largely of cross-referencing separate legislative provisions in different programs. Articulation between secondary and postsecondary programs in vocational education, though not an explicit purpose of federal law, is central to the effective conduct of vocational education at the local level. In addition, the SOICCs are a central yet currently unevaluated component in purported information flows for planning and policymaking in vocational education. Responsiveness of vocational education to the needs of regional labor markets is dependent not only upon accurate and timely occupational information, but also on adequate dissemination and utilization of such information. Since regional (substate) planning for vocational education is seen as a potentially cost-effective initiative in several states, the contribution of legislative mandates to such efforts should be evaluated.

Governance Issues for the National Assessment

In light of the earlier discussion in this paper, the following issues are suggested for the National Assessment to address. These are categorized in three issue areas: (1) characteristics and recent trends in state/local governance structures that affect policy decisionmaking and implementation; (2) the sole state agency provision in federal statutes; and (3) the effects of federal mandates for public sector interagency coordination.

Characteristics and Trends in Governance Structures

The National Assessment should:

- Conduct a comprehensive review of state legislation for vocational education, addressing the extent to which it complements or diverges from federal purposes, and reasons for recent and anticipated changes.
- Examine factors in state/local vocational education organizational and administrative structures that are perceived either as problematical or especially instrumental in the successful implementation of federal policy.
- Document changes in states' governance structures since 1980, the major reasons for those changes, the longevity and perceived effectiveness of new structures, and identification of trends, if any, across states or regions.
- Evaluate the effects of P. L. 98-524 provisions directly (such as Sec. 112 on State Councils, for example), or indirectly (e.g., discontinuation of the practice under VEA of using federal funds for postsecondary administrative support) on state policy decisionmaking or administrative practices.

The Sole State Agency for Vocational Education

The National Assessment should:

- Identify specific policy or administrative problems perceived by states to be directly related to the sole state agency concept.
- Assess the effectiveness of current policy and administrative mechanisms for the distribution of federal funds to postsecondary programs, with comparative focus on those states with postsecondary sole state agencies. (The assistance of state councils could be solicited here in

relation to their efforts under Section 112d(6) of P. L. 98-524.)

Interagency Coordination

The National Assessment should:

- Evaluate policy and operational linkages at state and local levels between vocational education agencies and other public agencies relevant to the education and training effort.
- Determine the impact of the NOICC/SOICC network on vocational education policy and administrative practice, such as program funding priorities.
- Assess the effectiveness of federal coordination mandates in the Perkins Act in eliciting cooperation relative to improved vocational education policy and governance.
- Identify and examine regional planning initiatives, either implemented or being considered in some states (such as Texas, for example), as means of improving coordination with both public and private sector constituencies.

REFERENCES

Bushnell, D. S., et al. (1977, December). *Articulating vocational education at the postsecondary level: Papers from the AACJC/AVA joint study*. Presented at the Boston Regional Conference on Education for Work.

Cox, J. L., Holley, J. A., Lawrence, J. E. S., et al. (1986, November). *Vocational education study*. Prepared for the State of North Carolina Joint Legislative Committee on Governmental Operations.

David, H. (1979). *The planning papers for the vocational education study*. Washington, DC: National Institute of Education.

David, H. (1980). *The vocational education study: The interim report*. Washington, DC: National Institute of Education.

David, H. (1981). *The vocational education study: The final report*. Washington, DC: National Institute of Education.

Davis, J. A., Cruze, A. M., Lawrence, J. E. S., & Colegrove, K. (1986, May). *The North Carolina community college study*. Research Triangle, NC: Research Triangle Institute.

Drewes, D. W., & Katz, D. S. (1975). *Manpower data and vocational education: A national study of availablity and use*. Raleigh, NC: North Carolina State University, Center for Occupational Education.

Faddis, C. R., Struck, J. W., & Newton, M. (1986). *State governance of vocational education 1986*. National Association of State Directors of Vocational Education.

Field, R. H. (1984). *State legislative perceptions of vocational education* (Occasional Paper No 102). Columbus, OH: Ohio State University, National Center for Research in Vocational Education.

Galambos, E. C. (1984). *Issues in vocational education*. Atlanta, GA: Southern Regional Education Board.

Education Commission of the States. (1982) *Education issues of concern to state policymakers*. Unpublished survey.

Gentry, D. K. (1979). National documentary study of the state level governance of vocational education, (Doctoral dissertation, Indiana University). *University Microfilms International*.

Gentry, D. K. (1979b). Federal and state governance of vocational education: Its relation to compliance with federal rules and regulations. In H. David (Ed.), *Planning papers for the* vocational study (pp. 37-49). Washington, DC: National Institute of Education.

Hoachlander, E. G. (1985). Vocational education in America. Berkeley, CA: MPR Associates.

Kirst, M. W. (1979). Research issues for vocational education (Compliance and Enforcement of Federal Laws). In H. David (Ed.), Planning papers for the vocational education study (pp. 51-78). Washington, DC: National Institute of Education.

Lawrence, J. E. S., & Bergman, E. (1984). Uses of occupational employment statistics (OES) projections data. Research memorandum prepared for Office of Economic Growth and Employment Projections, Bureau of Labor Statistics. Washington, DC: U.S. Department of Labor.

Long, J. P., et al. (1986). 2 + 2: Secondary-postsecondary curriculum coordination. Washington, DC: National Center for Research in Vocational Education.

Longanecker, D. A. (1985). AVTI management dilemma. Communique, 3(1), 1. Minnesota State Council on Vocational Technical Education.

McKinney, T. H. (1986). Strategies for improving quality in vocational, technical, and occupational education. Unpublished manuscript. Michigan State University, Lansing.

Minnesota State Advisory Council for Vocational Education. (1983). The sole state agency for vocational education in Minnesota. Minneapolis, MN: Author.

National Center for Education Statistics. (1983). Digest of education statistics 1983-84. Washington DC: Author.

National Commission for Employment Policy. (1981). The federal role in vocational education. Washington DC: Author.

Patton, H. M., Foster, J. D., Brizius, J. A., & Foster, S. E. (1983). The agenda for the board of vocational and technical education. Lexington, KY: State Research Associates.

Payne, W., & Carter, B. L. (1984). Governance, a help or hindrance? In Collaboration: Vocational Education and the Private Sector, 1984 yearbook of the American Vocational Association (pp. 99-104). Arlington, VA: American Vocational Association.

Research Triangle Institute. (1982). A study to make recommendations regarding a comprehensive state occupational education program. (Submitted to the Texas Education Agency). Research Triangle, NC: Author.

Tucker, M. S., & Mandel, D. R. (1986, November). Preface. In S. A. Rosenfeld (Ed.), Technology, the economy and vocational education. Southern Growth Policies Board.

Woodruff, A. P. (1978). National study of vocational education systems and facilities: Technical report (Vol. 1). Silver Spring, MD: Institutional Development Associates.

COORDINATION OF VOCATIONAL EDUCATION AND MANPOWER TRAINING PROGRAMS

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Introduction

Two separate systems of federally supported occupational training have emerged in the United States. On the one side, traditional vocational education is offered by the public schools and by junior and community colleges. It is financed largely through state and local funds, it has slowly developed over many decades primarily in response to local political and economic pressures, and it offers a range of instruction to a wide variety of social and ethnic groups. At its best, it provides high-quality training to able students who find secure places in the labor market. At its worst, it provides vocational orientation courses to students who have only a borderline interest in formal schooling. Both the best and worst seem largely unaffected by federal monies or regulations. Even though the federal government supports approximately ten percent of the cost and attempts to regulate such things as sex and race equity, participation by citizens and private industry, and programmatic evaluation, these requirements have in the past had only modest policy consequences at the local school buildings where services are being delivered.

On the other side, manpower training programs initiated in the sixties and currently funded by the Job Training Partnership Act (JTPA) are relatively new institutions dependent on federal financing, closely guided by explicit federal policies, and largely distinct from the public schools. While JTPA programs provide a second opportunity for obtaining vocational skills for those who have not learned adequate skills in secondary schools, JTPA programs have numerous organizational problems. For example, they have difficulty sustaining high-quality staff, are subject to constant political and organizational changes, and seem to have great difficulty in securing employment for graduates of their programs.

When separate systems serve different social and racial groups in the society, it is difficult for the system serving low-income, minority groups to provide high-quality service. Political, economic, organizational, and social factors all conspire to make such segregated institutions almost inherently unequal. As much as the federal government has attempted to reduce segregation in other contexts, its occupational training policies seem to have had contrary effects. For example, JTPA has alleviated public school responsibility for its high dropout rates, as JTPA has emerged as the unofficial receptacle for individuals who fail to obtain employable skills through public schools.

We have no way of knowing whether or not the existence of two competing systems of service delivery has aggravated youth unemployment in urban centers. The growing level of unemployed minority youth could well be attributable to other factors, including large numbers in the age cohorts that entered the labor market in the seventies, high minimum wages, competition from foreign industry, especially in manufacturing sectors where low-skill labor has traditionally been employed, declines in central-city employment opportunities, persistent racism, and overall declines in the rate of increase in economic productivity. Whatever the cause or causes, the increased differential between white and nonwhite youth employment that has occurred in recent years gives reason for social as well as economic concern. If dual systems of vocational training have not created the problem, they seem to have done less to alleviate it than proponents of manpower training programs had hoped.

A practicable policy solution to this dilemma is not easily devised. Calls for coordination among training institutions serving separate clienteles are typically ignored. Perhaps the most effective federal legislation would reconsider the organizational design of its occupationally related education programs. If vocational education and JTPA monies were instead used to open up educational opportunities for low-income students in quality training programs operated by well-established educational institutions, they might be more effective in reducing minority youth employment than is the current dual system.

In this paper, we (1) describe the historical processes that gave rise to the current system of institutional stratification, (2) compare the major types of training programs, (3) consider some of the differences in the evaluation research on these training programs, and (4) outline a research and policy agenda on these issues for the National Assessment of Vocational Education. Our historical analysis draws heavily on experiences in Chicago, both because we know this case more thoroughly than any other and because the patterns that have emerged in this city are similar to those we have observed nationally. We begin with the period just before World War I in order to emphasize how contemporary debates over vocational policy iterate those of the past.

Vocational Education: An Historical Perspective

The Pre-World War I Controversy

From the very beginning of the twentieth century, many groups and educators in Chicago had advocated some form of occupationally related training. Their views differed as to how that education should be organized and what the extracurricular content should be. One of the earliest, strong advocates of vocational education in Chicago was the Commercial Club, a group of leading businessmen. Believing that "the menace of socialism can be minimized by vocational training that will increase the intelligence and future earning power of our children" (Robinson, 1913), the Club proposed a state law that would create: (1) a separate system of vocational education schools; (2) a structure independent of the public schools to administer vocational education; and (3) local boards of vocational education, consisting of the community's superintendent of schools, two businessmen, and two skilled employees.

The Commercial Club's efforts were enhanced by a vigorous campaign for vocational education mounted by Edwin Cooley, Chicago's school superintendent from 1900 to 1909. As superintendent, Cooley had established a commercial high school located near the downtown business district. After his resignation from the superintendency, he devoted many years to active promotion of vocational education; the major bill to provide vocational training in Illinois became known as the Cooley bill.

Although the Cooley bill was given serious consideration in the state legislature during the years preceding World War I, it aroused the opposition of labor, teachers, leading educators, and reform-minded professional people. While all groups supported the concept of vocational education, they differed over the organizational form such legislation should take. Labor was most fearful that separate vocational schools would be used for indoctrinating schools in anti-union propaganda. As one typographical union official observed in 1913, "Many union men. . . fear that the schools may be turned into what has been bluntly termed 'scab factories'" (Chicago Tribune, 1913). School people were concerned that a separate vocational system would divide public education into competing sets of institutions, weakening the power of each. As Ella Flagg Young, Cooley's successor as superintendent, declared:

> Under one head and one authority all great projects have been brought to successful results. To divide the responsibility is to weaken the result. Not from any personal idea, but from an idea for the community's best good, I oppose the. . . [Cooley] bill (Chicago Tribune, 1912).

Reformers such as Jane Addams and the City Club of Chicago, a group of civic-minded professional people, were concerned about the extent to which vocational education was dividing one social group against another. Siding with labor, they insisted that any program of vocational education be incorporated into the existing administrative structure of the school system.

This conflict raised a central issue that has not yet been clearly resolved in a satisfactory way. Business groups believed that training for employment required learning specific skills that could lead to immediate employment opportunities, even if this meant a sacrifice in more general educational experiences. Given this objective, separate administrative entities for vocational education, which could assiduously pursue their assigned tasks, seemed entirely appropriate. Educators, reform-minded professional people, and many labor leaders disagreed, insisting that vocational education should be thoroughly integrated with a child's general education. By providing a child direct encounters with specific, meaningful occupational contexts, educators could awaken his or her curiosity about larger questions that could only be satisfied in art, science, and language courses.

Both sides could find serious deficiencies in the other's conception of vocational education. The narrow, more occupationally specific understanding of vocational education ignored the fact that technological changes required continuous changes in specific skill capacities. Moreover, it slotted pupils prematurely into specific vocations when the very purpose of education would seem to be the expansion of new horizons and opportunities. Yet the enthusiasts for relating vocational to general education often were able to develop these links more convincingly in theory than in practice. Schools that provided the full range of courses from industrial arts to higher mathematics ran the risk of offering such a potpourri that no clear definition of purpose ever emerged. Vocational courses often were little more than vague hints as to the kind of practical skills that were needed; general education courses were so "watered down" that they could hardly arouse intellectual curiosity, let alone satisfy it.

The controversies over the purpose, content, and administration of vocational education that were sparked by the Cooley bill would not be easily resolved. But with the passage of the Smith-Hughes Act in 1917, the first round in the debate came to an end. The federal government agreed to support vocational education, but it would do so only within the context of the existing system of public education. Separate administration and control were put to one side (Cremin, 1961).

The 1930s Debate

Controversy over vocational education broke out in Chicago once again in the 1930s. Two competing understandings of the purpose and content of vocational education were again expressed. One side was led by William J. Bogan, Superintendent of Schools from 1928 to 1936, who regarded vocational education as an extension of general education. Influenced by progressives such as John Dewey and Francis Parker, Bogan believed that the "primary function of the schools is to develop high character, good citizens," and the capacity of the student "to go forth into the unknown confident of his own ability to meet and solve life's problems." As a former principal of Lane Technical High School, Bogan believed that vocational education could help achieve this ideal, provided it concentrated on giving pupils diverse skills that could be used in a multiplicity of contexts. As he said to the National Education Association (NEA) convention in 1931:

> The wise businessman expects little in the way of specialization. In certain occupations knowledge of commercial subjects, drawing, and shopwork is very useful, but in general the businessman or the captain of industry asks for character, responsibility, initiative, energy, alertness, and adaptability (Proceedings of the 69th Annual NEA Meeting).

Quite another view of vocational education was expressed by Bogan's successor, William Johnson, Superintendent of Schools for Chicago from 1936 until 1947. In Johnson's view:

> There is a tremendous swing toward the revamping of our educational structure to the end that vocational and trade objectives shall take the place largely of the traditional cultural objectives. . . . It is estimated that 90 percent of our boys and girls are faced with an economic condition which demands that they be taught skills which fit them for some definite occupation (Annual Report of School Superintendent, 1936-37).

Johnson pursued his vocational education objectives through two separate policy initiatives. He first tried to restructure high school education throughout the city by changing its curriculum so that 80 percent of the courses would be in vocational education. Labor and teacher response to this plan was intensely negative. The Chicago Federation of Labor objected that this proposal "was inimical to the interests of labor and would tend dangerously toward a rigid class stratification in society by denying students those learnings which would maximize their social and economic mobility" (Hazlett, 1968). The Chicago Teachers Union complained that the plan was a "totalitarian effort to force workers' children into the ranks of workers." It was a "direct attack on the American ideal of equal opportunity for all" (Chicago Daily News, 1937). The Chicago Teachers Union was also fearful that certified teachers would be replaced by individuals with trade skills but no extensive educational credentials. Even more, they feared the program would be used to extend the patronage resources of the Democratic party organization. As one teacher leader complained, "The debasing of the school system into an annex of the local spoils system reaches its climax here" (Ibid.). This combined opposition of labor groups and teacher organizations was so intense that Johnson disowned his plan and assured all parties that he was not planning any fundamental reorganization of the school system.

Johnson's second effort to extend vocational education was more successful, and the separation of vocational from general education became more clearly institutionalized. He established or expanded three of Chicago's most successful vocational training institutions. In January 1938, he opened a new Commercial High School, the institution that had been anticipated by Cooley decades earlier and which provided career opportunities for potential secretaries and business office employees in an institution located near the central business district. Secondly, he rehabilitated and expanded the city's trade school. This school had been established after World War I as a training school for disabled war veterans. By 1930 the school had become the major center for apprenticeship training in skilled crafts within the Chicago public schools. Trade union support for its expansion had been secured on condition that the number of apprentices in any given trade would be limited so as not to flood the market with certain types of skilled labor.

By 1937, apprentices attending the school included carpenters, printers, photoengravers, sign painters, steamfitters, plumbers, sheet metal workers, machinists, electricians, painters, paper hangers, millinery workers, tailors, metal lathers, and plasterers. The enthusiasm with which the program was accepted by both labor and industry is indicated by the fact that the union sent "coordinators" to work half of each day with apprentices, and manufacturers were said to have donated $75,000 worth of equipment and materials in that year.

In the next few years, Johnson rehabilitated and enlarged the building, and, in the press of the shortages caused by the war, expanded the number of students engaged in the training programs. Another vocational school was also opened during the Johnson years. Once again the educational emphasis was on career training sufficiently specialized so that there was no need for advanced education. Special emphasis was given to programs in printing, aeronautics, the automobile industry, electrical work, carpentry, and machine shop. These three schools would eventually become part of the elite of Chicago's vocational education schools, but they nevertheless remained part of the broader educational system of the city.

Manpower Training Programs

When the Smith-Hughes Act first established vocational education on a nationwide basis, educators, businessmen, and labor leaders participated in a national discussion of the proper relationships between school and work. Forty years later, when the federal government once again considered the most effective way of educating people for work, a comparable debate never took place, and the outcome was determined by default. Urban schools no longer had the public esteem they once enjoyed, and reformers chose to establish new institutions for training individuals for work. Any pretense that vocational education provided anything more than immediately valuable employment skills was put securely to one side.

The creation of a new system of urban vocational education parallel to that provided by the public schools was not a carefully calculated decision. Instead, federal policymakers backed into new "manpower development" programs haphazardly, on an experimental basis, and without much thought for the long-range consequences of their actions.

The first signal that a new national policy was beginning to emerge was the formation in 1961 of the President's Committee on Juvenile Delinquency and Youth Crime. This body launched a number of experimental programs designed to provide alternative opportunity structures for low-income youth in the hope that these would alleviate delinquency and the worst forms of gang life (Ohlin & Cloward, 1960; Marris & Rein, 1967). Very quickly, these programs began placing particular stress on employment training and job placement.

As these experiments were becoming established, federal policymakers began planning President Lyndon Johnson's much heralded "war against poverty." In early 1964, two constraints had sharply defined the way in which this domestic "war" was to be fought. First of all, early conferences with the President's Council on Economic Advisors had made clear that budgetary considerations precluded any major increases in welfare benefits or low-income assistance programs. Secondly, the heated debate over aid to parochial schools had prevented the passage of any general aid to education; therefore, no poverty monies could be provided for educational instruction for children between the ages of five and 16. With the educators engaged in a fratricidal dispute, poverty policy almost inevitably gravitated in a direction anticipated by the President's Committee on Juvenile Delinquency. The greatest poverty resources were concentrated on manpower training and development programs, most of which were conducted outside the public schools. Programs included Neighborhood Youth Corps, Job Corps, and a host of local community action training programs organized by newly formed groups in low-income and minority neighborhoods.

The Economic Opportunity Act provided a new model for vocational education without ever being required to defend the theoretical rationale for its policy. In its wake followed a series of additional governmental programs that promoted manpower development and training, model cities, and community development. These programs became so multifaceted and complex that it was in this policy area that Richard Nixon's argument for decategorization and decentralization proved most persuasive. The Comprehensive Employment and Training Act of 1973 (CETA) consolidated many of the training and other employment programs into a single overarching, locally directed program.

With the passage of CETA, the full implications of this catchall bag of public policies became apparent: a new set of public institutions, competing with the public schools, was providing instruction that apparently led directly to employment. What reformers and educators had most feared in the period prior to World War I had come into being in the early sixties. Riding the crest of a civil rights movement and a war on poverty, policymakers founded an alternative system of vocational education. The JTPA, which replaced CETA, made even more explicit the connections between these training programs and the business community.

Groups and organizations that perceived benefits from these new institutional forms were multifarious. Federal policymakers recognized that newly created employment centers heavily dependent on federal funding were much more sensitive to federal guidelines than were well-established school systems. Local government officials, pleased that these new monies for manpower development were directly subject to their direction, eagerly backed the new government programs. In more than one city, the programs enhanced patronage resources of local politicians. This was particularly true in Chicago, where federal funds were quietly subsumed into city coffers and distributed to groups deemed worthy of support.

Minority groups, who in many cities had obtained only limited access to the better vocational programs, also embraced the availability of an alternative. Their enthusiasm was further enhanced by the propensity of many manpower programs' tendencies to hire members of minority groups as administrators and teachers. Finally, politically active community organizations were often able to use resources from these programs to sustain group activities.

Although school officials did not initially regard these new programs as a serious challenge to their control of vocational education policy, the full political strength of interests associated with manpower programs became evident in the course of the creation of the newly established Department of Education. When educators tried to define manpower programs as among the policies that properly fell within the domain of this new department, they met great resistance from the Department of Labor. With strong support in Congress, the Department of Labor successfully defended itself against the claim that manpower programs provided vocational education that was properly the responsibility of educational professionals. Labor's success in maintaining these as separate programs even after the creation of a Department of Education has meant institutionalization at the national level of two separate systems of vocational education, each with its own set of principles justifying programming and curriculum.

The Variety of Occupationally Related Education Programs

The vocational education institutions that have emerged out of this process are highly varied, contain an extraordinary range of points of decision, and have a considerable capacity to adapt to change. Just to name the types of vocational educational institutions is to emphasize their diversity. Vocational programs in comprehensive high schools are perhaps the most numerous and best known. At this level there are also specialized vocational high schools, regional technical institutes, and area vocational centers, which high school students attend on a part-time basis.

Postsecondary vocational education is even more varied and complex. Junior and community colleges provide an extensive, varied, and highly flexible set of vocational programs. In addition, there are proprietary schools, regional occupational centers, on-the-job training provided directly by industry, JTPA programs, trade schools, and apprenticeship programs.

The mix of these institutions and their modes of operation vary greatly among states and among regions within states. In some parts of the country, postsecondary schools play the dominant public role. In other states, regional technical schools are key. In still others, specialized vocational high schools make especially valuable contributions.

While some policy analysts may object to the variety and overlapping responsibilities of vocational education institutions, the complexity of the system contributes to its strength. To the extent that vocational programs compete with one another for students, teachers, public resources, and contacts with local business and industry, these institutions have incentives to modify and adapt their training to the changing labor market. The revolution in word and data processing, for example, has generated a strong market demand for workers with skills relevant to the operation of computers. First postsecondary schools and proprietary institutions and then the more advanced high school programs upgraded their offerings in these areas. Those parts of the country in which program innovation was most rapid are reaping the economic advantages. Other states and localities are now making their own assiduous efforts to catch up, usually through state or regional economic development plans. Even though sluggishness may be found in some places, it is doubtful that a more centrally planned vocational education system would have responded to technological change more quickly.

As decentralized and flexible as most of the American vocational educational system is, however, some of its components have become rigid and stagnant, and in these areas that institutional reform is especially needed. The greatest problems are found at the secondary level, particularly in comprehensive high schools. Here public vocational education across the country began some six or seven decades ago, and here past practices have become so deeply embedded in an institutional framework that flexibility and responsiveness are more the exception than the rule. Requirements governing the recruitment, certification, promotion, compensation, and retention of teachers are so well defined that adaptation to new technologies is costly and slow. Also problematic are rules governing the allocation of resources, the acquisition of equipment, and the use of facilities.

The Hierarchy of Occupational Training Programs

The most intractable problem generated by the current system is a function of the well-defined hierarchy of institutions that has gradually emerged. Some vocational programs are exemplary in quality, enjoy abundant resources, admit a limited number of students from a large number of applicants, receive materials and supplies from the private sector, and enjoy enviable placement records. Less well-endowed programs admit students without other educational options, have limited facilities, maintain routine course offerings, and have few contacts with the private sector. At the top of the vocational hierarchy are the postsecondary institutions, including the community and junior colleges; in the middle are the vocational programs in many of our secondary schools; at the bottom one finds the many and varied manpower training programs funded under JTPA.

Postsecondary vocational programs have expanded rapidly over the past two decades. These programs are notable for their attractiveness to students, the amplitude of resources available to them, the ease with which they can modify course offerings in response to changing market demands, and the many connections they have established with commerce and industry. Some secondary vocational programs in urban areas approach the high level of capacity and performance that is characteristic of many postsecondary schools. Yet these successes at the secondary level are exceptional in several respects. First, they usually occur in specialized vocational high schools that recruit students citywide and develop reputations for excellence in certain vocational areas, such as industrial trades or business skills. Second, they are given a degree of autonomy from general secondary school policies, allowing them to recruit staff and build private sector relations not typically found in comprehensive high schools. The private sector, in turn, finds them highly attractive sources of potential labor. Third, many of their students are college bound. Although they operate as vocational schools, they in fact are not directly responsible for the transition from school to work of many of their students. In fact, their reputation for overall academic excellence rivals that of college preparatory secondary schools.

The less well-endowed vocational schools and the vocational programs in many of the urban neighborhood high schools offer much less substantial programs and have limited contact with the private sector. These, of course, are the dominant type of urban vocational education institutions. Instruction is limited by inadequate facilities and outdated equipment and supplies. Purchase of new materials is difficult for comprehensive schools, both because of the expense of individual pieces of sophisticated equipment and the dilemma of equitably distributing the sparse new equipment that is available. The prestigious schools, by contrast, secure such equipment and materials through private donations. Moreover, administrators of less well-endowed vocational schools have far less staffing flexibility than their more prestigious counterparts.

Advanced skill training is generally not provided in comprehensive schools. Instead, general work-related skills are stressed, including introduction to the basic language of specific vocations and to the expectations employers have in certain industries. Clerical and general business courses in comprehensive schools may be somewhat more thorough in their introductory courses. These often provide graduates with typing and word processing skills that might qualify them for immediate employment.

JTPA forms the bottom tier of the system of occupational training that our country has developed; its organization and clientele are so distinctive that it in fact constitutes a separate component of what has become a dual system. Although JTPA programs vary considerably in quality, and there are no doubt some programs in nearly every city that are of exceptional value, these training programs labor under an especially severe constraint: they are officially designated as a service-delivery system specifically reserved for the low-income population.

JTPA commitment to serve those that other programs have "failed" is certainly laudable. Nonetheless, JTPA encounters the kinds of difficulties that emerge when institutions concentrate their services on that segment of the population where unemployment is the greatest. The number of student contact hours for teachers is high, teacher salaries are relatively low, relationships with industry are difficult to sustain, and successful placement of graduates in stable positions of employment is difficult. It is also difficult to establish working relationships with other, more solidly established, government agencies.

Prior to JTPA, CETA programs had difficulty in establishing sound relationships with private business firms. Most CETA on-the-job training placements had been within the public sector. Congress has tried to rectify this arrangement in JTPA by creating private industrial councils and by giving tax credits to firms who hire individuals enrolled in JTPA or comparable training programs. When these innovations were announced, CETA administrators expressed their support: "Private institutions," one said, "simply don't want to mess with government; they say that once you let them in you never get them out, and they're right. They don't want paperwork, and they don't want government inspectors snooping around their shop floor. But they will respond when an incentive is offered, and I think this might work very effectively. It means that businesses can save some bucks and our people can do more than move leaves around for a few months." Although the observation was expressed in optimistic terms, it points to difficulties experienced by both CETA and JTPA programs. Businesses and industries embrace prestigious vocational education programs, but they tend to shun less-established programs serving a low-income clientele. Advisory councils may be changing the pattern, but this has yet to be shown. As Richard Elmore has noted, the "weakest link" of these federal programs

> is the connection between youth employment services and private sector employment. Private employers seem generally to have adopted an arm's-length posture toward youth employment programs—occasional token involvement in advisory groups, modest cooperation in work experience programs, and a generally critical view of the ability of schools to prepare young people with the skills needed for entry-level employment. The few outstanding cases of private sector linkages seem to have come about as a result of school system actions rather than CETA-initiated activities. (Elmore, 1980, emphasis added).

There are some JTPA programs in nearly every city that are of exceptional value. For example, a Rochester, New York, tool and die training program that was largely run by private industry boasted an exceptional training and placement record. Such impressive program performance is unusual, however. As one report on Rochester programs pointed out, "Apart from the tool and die program, the other Rochester CETA programs appeared much less selective and far less likely to lead to permanent unsubsidized employment" (Boyd & Cline).

High School and Beyond (HSB) survey data reveal the extent to which the CETA programs that preceded JTPA were in fact aimed at the low-income, minority populations. Employed black students were five times as likely as whites to have a CETA or other government-sponsored job: 22.7 percent of black sophomores and 27.8 percent of the seniors reported their job in these terms, while only 4 percent of the white sophomores and 5.3 percent of the white seniors so described their positions. Hispanic students fell roughly in between blacks and whites. Moreover, a much larger proportion of students from low-income families had jobs sponsored by the government than did higher-income students. The extent to which CETA served a distinctive social clientele was also evident when one compared student participation in the cooperative education programs operated through the public schools with participation in CETA programs.

While the cooperative education programs had similar percentages of participants from all racial groups (13 percent of black seniors, 11 percent of Hispanics, and 10 percent of whites), CETA programs were marked by strong minority predominance (26 percent of black seniors, 15 percent of Hispanics, but only five percent of whites). Similarly, variation in income among participants in the cooperative education program was large, while CETA programs were aimed largely at low-income groups.

Viewed positively, these data indicate the critical role that the government has played in recent years in providing training opportunities for minority youth. Viewed negatively, these data also suggest the extent to which CETA programs are serving a racially and class-segregated clientele, leading to stereotyped assessments of the quality of their programs and the marketability of their graduates.

Coordinating Vocational Programs

The distinctive status and clientele of manpower training programs have made it difficult to establish meaningful coordination between these programs and traditional vocational education. Although both JTPA and the Perkins Act have called for coordination between the two sectors, neither finds much occasion to collaborate or seek ways in which common resources might best be used for mutual benefit. Instead, they coexist autonomously, often entirely unaware of the vocational services offered by the other, even when located nearby and offering programs of conceivable benefit to one another.

In Chicago, for example, most low-ranking vocational school officials knew little and cared less about the CETA programs that preceded JTPA. Many contended that the law does not allow them to inform any enrolled student about the availability of the CETA training programs, regardless of potential applicability of training. They generally complained about the quality of any CETA workers assigned to work in the public schools—unless the school administrator was able to select one of his or her own students for a CETA-paid position. They regarded CETA dollars as wasted money, paying exorbitant funds for programs that included stipends to trainees. School building-level administrators seldom showed any awareness of vocational programs being provided by CETA outside the public schools. For the Brahmins in the school system, CETA programs seemed simply "untouchable." Given these attitudes toward CETA, it was difficult to translate formal cooperation into substantive programs. School administrators, of course, were not the sole sources of intransigence. CETA administrators were equally uncharitable with regard to the public schools. They claimed that they were educating those that the schools had "failed."

Data from the HSB survey reinforce these impressions of the separation of CETA and school-related programs. For one thing, self-reported participation of high school students in CETA programs increased only from 6.5 percent in 1972 to 8.5 percent in 1980. That the percentage involvement in CETA programs should have increased only slightly while CETA expenditures increased threefold over an eight-year period indicates the extent to which CETA programs were aimed at those who had already left the public schools. CETA claimed to serve those the high schools had failed; quite clearly CETA and the vocational components of the public schools together failed to use their resources jointly to provide the best possible vocational experiences.

Comparisons between student participation in cooperative education and in CETA further document program separation. On the one hand, vocational education students were far more likely than general education students to participate in cooperative education programs, which provide work opportunities for students through the public schools. Of students working in the cooperative program, 21.4 percent were in vocational programs, but only 9.6 percent of the "general" students were—a difference of 11.8 percent. Participation in CETA, on the other hand, was only 1.8 percent greater among vocational than among the general education students. In other words, where the public schools were responsible for administering a work project, such work opportunities were closely coordinated with the vocational training program in the high schools. Where work was sponsored through the separately managed CETA programs, working relationships were no closer with vocational education than they were with the general education programs of the high school. Richard Elmore has reached quite similar conclusions:

> Federal incentives [for cooperation between CETA and public schools] are working against a long tradition of competition and animosity between manpower service deliverers and school systems. Manpower people see themselves as coping with the school system's failures: dropouts, in-school youth who are ill-prepared to enter the work force, and disadvantaged youth who have had difficulty getting access to vocational education programs. School people, on the other hand, criticize youth employment programs for their narrow focus on job-entry at the expense of broader educational objectives; for their willingness to reward youth who have failed to meet the school system's standards of performance; and for their focus on disadvantaged youth at the expense of the general youth population. One sign of this distrust is duplicated programming. CETA prime sponsors often run basic skills and high school equivalency programs on the assumption that youth who have been pushed out of school cannot be expected to go back. School systems run career awareness and work experience programs on the assumption that these programs work better when they are orchestrated with academic work. Another sign of distrust is pro forma coordination. Each party agrees to perform some specialized task in isolation from the other. School personnel will offer a special high school equivalency course off campus. CETA program

operators will agree to accept a certain quota of in-school youth. The net effect of coordination in the presence of distrust is a basically unintelligible, disjointed, and inaccessible delivery system (Elmore, 1980).

Research and Policy Issues

With passage of the Carl D. Perkins Act of 1984, the objectives of vocational education and manpower training have become increasingly similar. Both are expected to develop improved links to the private sector, and both are expected to use federal monies to enhance the career opportunities of disadvantaged groups. It makes little sense for these programs to be designed, implemented, and evaluated in ways that are completely independent of one another. On the other hand, it is not clear what is to be gained from pious recommendations that the two be better coordinated. It might be more appropriate for both to be carefully assessed and to expand those elements within each that have proven to be most successful.

Because vocational and manpower programs have such distinct identities, the research that has been undertaken on program effectiveness has gone in two quite different directions. Research and data collection on vocational education have been sponsored by the Department of Education. Manpower training evaluations have been funded by the Department of Labor. As a result, we currently lack systematic comparisons of the effectiveness of different occupational training programs. Studies of the effects of vocational education on employment and earnings have compared it to general or college preparatory curricula. Evaluations of the effects of manpower training have compared different types of manpower training or compared students in these programs with comparable individuals receiving no training at all.

The type of research has also differed for vocational education and manpower training. Manpower programs have been studied by exacting experimental design methodologies in which individuals are randomly assigned to test and control groups. The effects of vocational programs have usually been estimated through standard regression techniques in which family background and various school characteristics are controlled. Both techniques have their limitations. The natural experiment often suffers from difficulties in assuring random assignment as well as attritions in the size of its test and control groups. Regression or other techniques that control statistically relevant variables may leave key factors uncontrolled, and the observed effects of vocational education may be subject to selectivity bias.

Even though a direct comparison between vocational and manpower programs has not been undertaken, there is reason to believe that vocational programs are more effective. Studies of vocational programs indicate that vocational education is at least as effective as—and probably more effective than—general education in preparing students for the work force. Manpower programs, on the other hand, have had scarcely any discernible effect on future employment, future earnings, or the acquisition of further education. This is especially true of labor market preparation programs, temporary jobs programs, and other low-cost, short-term efforts to enhance awareness of occupational opportunities and to introduce young adults to employer expectations and working contexts. The one exception to this pattern is the Job Corps, whose emphasis on both basic educational skills and specific occupational training resembles the emphasis of most vocational programs. For those remaining in the Job Corps for one year or more, the returns to education may be roughly comparable to those received from a year of vocational training (Committee on Youth Employment Programs, 1985).

Two factors may account for the difference in the effectiveness of vocational and most manpower programs. Manpower programs may be less effective simply because the certificate received by those completing the program has little prestige. Studies have shown that the credentialing effects of education on career opportunities are significant. A high school diploma or college baccalaureate seems to affect one's future earnings in ways that go beyond the knowledge acquired in the acquisition of the degree. The credential is used by employers to reduce the costs of searching for qualified employees; by holding an appropriate credential, one becomes eligible for opportunities that could not otherwise be easily obtained.

Most manpower programs are unable to distribute credentials that are similarly beneficial. Because trainees must be of low income or from a welfare-dependent family, employers may need to be reassured that a training program graduate can perform adequately. Unless a particular program can develop a tradition of excellence, its graduates may bear a negative stigma rather than a positive credential. The effect of possible stigmatization of manpower programs is one area in which more research is badly needed.

But the differences between vocational and manpower programs are probably not just perceptions and credentials. In addition, the amount, intensity, and quality of the instruction also seem to vary. Because vocational programs are an integral part of a larger educational system, the teachers in these programs benefit from the traditions, protections, and compensation paid to the teaching profession more generally. Systematic studies that compare the background, training, compensation, and career prospects of instructors and administrators in the two sectors would be useful for delineating more precisely the resources available to each.

If further research confirms our hypothesis that manpower programs are less effective than vocational education, then it is time to consider policy options that can improve the access of young adults from low-income, minority backgrounds to vocational education.

One alternative might be to use JTPA monies to finance vocational education grants after the age of 16. Grants would be available only to students from low-income or welfare-dependent families, but they could be used to help defray tuition and other expenses incurred by attending any approved public or private vocational or general education program. Existing manpower programs with an effective employment training record would be able to recruit grant recipients. Ineffective programs would either be forced to redesign their programs or lose their clientele. Mainline vocational programs would be encouraged to enlarge their services to low-income minorities, and by so doing, they would begin to undermine the dual system of occupational training that has evolved (Committee on Vocational Education in Depressed Areas, 1983).

References

Annual report of the Chicago superintendent of schools, 1936-37.

Boyd, W. L., & Cline, H. (1981). Vocational education in a technical market. Washington, DC: National Institute of Education.

Chicago Daily News. (1937, 11 November), pp. 1-3.

Chicago Tribune. (1912, 3 November), p. 4.

Chicago Tribune. (1913, 14 January), p. 4.

Committee on Vocational Education in Depressed Areas, National Research Council. (1983). Education for tomorrow's jobs. Washington, DC: National Academy Press.

Committee on Youth Employment Programs, National Research Council. (1985). Youth employment and training programs: The YEPDA years. Washington, DC: National Academy Press.

Cremin, L. A. (1961). The transformation of the school. New York: Vintage Books.

Elmore, R. F. (1980). The youth employment delivery system (Policy Papers for the Vice President's Task Force on Youth Unemployment). Waltham, MA: Brandeis University, Center for Public Service.

Hazlett, J. S. (1968). Crisis in school government. Unpublished doctoral dissertation, University of Chicago.

Marris, P., & Rein, M. (1967). Dilemmas of social reform: Poverty and community action in the United States. New York: Atherton.

Ohlin, L. E., & Cloward, R. A. (1961). Delinquency and opportunity. New York: Free Press of Glencoe.

Proceedings of the 69th National Educational Association Annual Meeting.

Robinson, T. (1913). Present day need for vocational education. Iron Age, 1048-53.

COMMENTS ON STATE AND LOCAL GOVERNANCE AND COORDINATION

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My role today is to discuss the two papers presented in the session on State and Local Governance of Vocational Education. The first paper, titled "Coordination of Vocational Education and Manpower Training Programs," is by Paul Peterson, and the second paper, "Issues in State and Local Governance of Vocational Education," is by John Lawrence. Both topics are very appropriate for a conference such as this, and each has tremendous ramifications as the National Assessment deals with evaluating vocational education and the impact of federal vocational dollars, as well as in preparation for suggested restructuring of vocational-technical education in America.

The paper by Paul Peterson spoke to two separate systems of federally supported occupational training in America. The first is traditional vocational education provided through the public schools and community colleges, while the second is the manpower training programs initiated in the 1960's, better known as MDTA (Manpower Development Training Act) then, and now as JTPA (Job Training Partnership Act). The paper gives an excellent review of the history and development of the two separate systems of occupational preparation.

Wisconsin, the state I am from, has a similar history dating back to 1911. As part of that history, I cannot help adding that vocational education has played a significant role in developing the nation's skilled technical work force and can continue to do so in the future. During World War I, vocational education, through the federal board of vocational education, provided the training and retraining of citizens for war production. During the depression and the various alphabet programs offered by the federal government, vocational education found itself again involved in a national crisis by providing educational programming as part of the restructuring of America. Along came World War II, and again vocational education was called upon to produce a quality war production work force; it did so. In 1958, Sputnik was launched and so was the need for a new kind of education in America, with a strong emphasis on mathematics, science, and technology. Vocational education stepped forward with what we now refer to as technical education and has become a forerunner in preparing a highly technical work force. As we now move through the 1980's, vocational-technical education is playing a major role in the restructuring of America's manufacturing through retraining the existing work force, as well as preparing new entrants with a highly skilled technical background.

Peterson states in his paper that as decentralized and flexible as the American vocational education system is, many of its components have become rigid and stagnant, and it is in these areas that institutional reform is especially needed. He goes on to elaborate that the greatest problems are found at the secondary level, particularly in comprehensive high schools. I must concur with these statements, and offer the opinion that unless vocational education changes and becomes more responsive to the needs of business and industry, there will not be a vocational education thrust in the years to come. High school programming must reflect the needs of business and industry and begin offering programs based around clusters of occupational needs, such as the cluster of pneumatics and hydraulics, electromechanical, biotechnology, thermodynamics, etc. In order to accomplish that, high school vocational education must look at different ways of delivering their programming, including a closer relationship with business and industry, "2 + 2" curricula with postsecondary institutions, extensive assessment and career exploration efforts, and new efforts in adult continuing education based around the same clusters. It is going to become very important to secondary vocational education to (1) keep their programs updated; (2) identify, develop, and implement new ones; and (3) discontinue outdated programs to make room for the new technologies that must be introduced and explored in the various clusters identified above and others as well. Vocational education is at a crossroads in serving business and industry. It may be too late for some to change, but those that recognize the need to change will continue to move forward with the effort of vocational-technical education in America.

Peterson also spoke eloquently about the need for coordinating vocational programs between the manpower training programs and the traditional vocational-technical offerings. Even though the Perkins Act presently calls for coordination between the two sectors, very little is taking place outside a cursory review of the respective plans. It is becoming enormously important that the two delivery systems come up with a joint and comprehensive planning model for delivering occupational education programs in our respective states.

It is increasingly mandatory that wise and efficient use of public funds for employment and training requires the development of a consistent state policy framework. States must carefully select priorities within a well-balanced agenda and implement properly designed programs that will be effective, well coordinated, and efficient. One such approach to improving coordination would be for the agencies involved in the employment and training program efforts to develop a comprehensive employment policy for the state. Included in that policy would be the establishment of job centers to provide one-stop shopping for employment training services—a single contact point for job seekers and employers.

A consolidated system should be designed to meet three goals: (1) cost-effective use of resources, (2) easy and equitable access to services, and (3) quality. When such a consolidated system has been put in place, the public can get a better evaluation of the effectiveness of their investments in these programs. Ideally, the job center would be a place in the community for both employers and job seekers to enter the employment training system. The job center staff could register the client for work, or enroll the client in any of several programs associated with the job center. In program managers' terms, this means the job center would provide a consolidated intake eligibility determination and assessment process. Fundamental to successful coordination would be the role of the job center in managing the individual client through the service delivery system in a way that encompasses all of the client's needs and fosters the client's success.

The job center would provide a single point of service to employers as well. For employers, the job center would provide one-stop access to (1) the labor pool, including special target groups, (2) state and local labor market information, and (3) identification of programs to support customized training and retraining of workers. The job center would also develop exemplary linkages with employment development agencies, including those in the community, developed through sound labor market information and assistance to employers in finding a skilled work force.

Further research will be needed to develop the specifics of the electronic networking of employers, job seekers, and employment and training programs that could be envisioned. However, our goals should be (1) easy access for all persons to employment and training opportunities no matter where they live and (2) easy access for employers to the workers who are served by public programs.

The second paper I was asked to react to is titled "Issues in State and Local Governance of Vocational Education," by John Lawrence. This paper speaks largely to state governance by secondary agencies for vocational education. I must indicate that I come from a postsecondary system that has a separate State Board of Vocational, Technical, and Adult Education and 16 individual districts with local boards of education and separate taxing powers. At the outset, I thought I would have to get up here and defend myself as a postsecondary vocational educator among many who would be relating to secondary vocational education programs. However, it became apparent very quickly this morning that a number of speakers have chosen to emphasize the future importance of postsecondary vocational education for delivering the skilled technical work force that will be needed in the 1990s and beyond. Lawrence reminded us what Congress wanted regarding the areas that the Assessment should address. These areas for assessment included the quality of service, sufficiency of resources, capacity of the system to respond to changing needs, and coordination of vocational education programs with employment and training and economic development among the states. Each of these topics in itself deserves a conference to adequately discuss the issues.

As we look at the four areas above to be addressed by the Assessment, the most important one that must be dealt with is "the capacity of the system to respond to changing needs." It is also interesting to note that, as we evaluate the direction for vocational education, this direction is complicated by a greater number of compounding developments than has ever faced the program in the past. Advice such as the following seems to be coming simultaneously from all directions: (1) be aware of the maturing baby boom generation; (2) be aware of the expanded use of high technology in modern industry and business; (3) be aware of declining resources and return to supply side economics; (4) be aware that our population is growing older and vocational education is challenged to serve needs of the graying generation; (5) be aware that youth unemployment and underemployment are rampant and must command the immediate attention of vocational education; (6) be aware of the need to learn to work with many new entrants in the training field; (7) be aware of the needs of women, minorities, the handicapped, the poor, the migrant, the immigrant; (8) be aware of the changing values of modern society, the changing lifestyles, and the need to respond in terms of a different work ethic; and (9) be aware that today's by-words are stress management, time management, and conflict management. All of our programs and services must be responsive to these concerns, and the list could go on and on.

The paper cites three areas of governance that will be especially important for vocational education in the immediate future from the point of view of national policy. The first is the composition of state and local vocational education systems relative to the implementation of federal vocational education priorities. It seems that this particular topic is always a constant concern for anyone trying to deliver vocational education. I don't believe that we should get that carried away with the composition of state and local vocational education systems in any Assessment of vocational education in America. Each state has had in the past, has today, and will continue to have in the future, various methods of delivering vocational education. There is no way that a revised federal Vocational Education Act can drive the governance of vocational education.

The second area of governance referred to by Lawrence is the way in which states accommodate the growing emphasis on postsecondary vocational education, especially in view of the sole state agency concept. There is a definite movement in the direction of postsecondary vocational-technical education. As a representative from a state and agency that serve primarily postsecondary vocational education needs, I can say that this is a definite trend by the number of inquiries we receive each year as to how the Wisconsin structure operates. Many states are in the process of evaluating their vocational education system, and each and every one is trying to move toward a stronger postsecondary delivery system. It is also interesting to note that the sole state agency concept is also a nagging problem that seems to emerge each time a reauthorization is discussed. This also should not be a concern to the degree that it is for either authors of the bill or agency heads. It will still be up to the respective agencies to present their cases to their governors; the governors in turn will make a choice on the agency most responsible or respected for delivery of vocational-technical education in their respective states.

The third area of governance spoken to by Lawrence is the extent of overall coordination in national human resource development efforts, particularly as these relate to employment and productivity in the work force. Under this topic and elsewhere in the paper, the author made a point that there is no comprehensive human resource policy at the national level. This statement is so true; a national policy (mission) for vocational-technical education is sorely needed. This is probably the single most important issue that we face in vocational-technical education in the country. If you pause for a moment and think about a national policy or mission statement, you will find that the state directors of vocational education have one, the U.S. Department of Education's Vocational Division more than likely has a mission statement, and the National Center for Research in Vocational Education at Ohio State University also probably has a national mission statement for vocational education. What is needed is a statement developed by a neutral group, unbiased by close family members, and developed with extensive involvement by business and industry. This mission statement should be reviewed, put to the test through various national hearings, and eventually placed in the federal Vocational Education Act. Only after a national policy/mission statement is developed will vocational educators understand the direction in which vocational-technical education must move in America.

Following the development of such a policy or mission statement, the various organizations and associations can then develop strategic goals and plans to carry out the mission. The strategic goals will then become realistic, for immediate needs as well as long-range objectives. We need this kind of mission statement and strategic goals for vocational-technical education in this country so as to drive the states in determining the appropriate mix of programs and services they are to deliver.

Such a national policy/mission and strategic goals will also influence the federal Perkins Vocational Education Act by stating exactly how the national act [program plan] should operate. Presently, our national priorities found in the Vocational Education Act are developed by "special interest" groups, by pet projects of legislators in Washington, or by special interest organizations.

A national mission/policy statement must be the overriding concern in any Assessment that will include recommendations for future restructuring of the vocational education act. Today's vocational-technical schools, institutes, and colleges have emerged as highly varied organizations with considerable capacity to adapt to change. These schools must provide an extensive, varied, and highly flexible set of vocational-technical offerings. Many of these institutions have expanded rapidly over the past two decades; there is the potential for all of them to do so in the next decade. These institutions have been notable for their attractiveness to students, implementation of resources, ease with which they can modify course offerings in response to changing market demands, as well as the many connections they have established with business and industry. Vocational-technical education must capitalize on this past experience and move the services of these institutions to a higher level of service delivery. Our mission of the past has been to prepare America's citizens for entrance into and continued upgrading in the work-a-day world. In the past, we have had a loosely knit mission to keep the American work force prepared for a constantly changing market throughout business and industry.

Our mission for the future challenges us to: (1) keep our programs updated; (2) identify, develop, and implement new highly skilled and technical programs; (3) reach out further with basic skills to the disadvantaged and handicapped; (4) articulate and coordinate our programs with high school programs, as well as the university system specialty programs; (5) customize courses and technical assistance for business and industry; (6) deliver courses through new methodologies and services at the worksite, and (7) work cooperatively and innovatively with our communities to expand their economic base.

The vocational technical system in America has changed in the past to meet a changing society. We must promise America that the system will continue to change in the future to meet the changing needs of business, industry, labor, and agriculture.

V. ACADEMIC SKILLS AND OCCUPATIONAL TRAINING

Academic Education and Occupational Training

John H. Bishop

Determinants of Excellence in Vocational Education

Stuart A. Rosenfeld

Comments on Academic Skills and Occupational Training

Ellen Summerfield

ACADEMIC EDUCATION AND OCCUPATIONAL TRAINING

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Introduction

Most of the young people entering professional, technical, and managerial occupations start their occupational training in a school. Higher education is predominantly occupational education and is becoming more so each year (see Table 1). In 1980-81, only 17 percent of master's degrees and 33 percent of bachelor's degrees were in traditional liberal arts fields. Many of those who get these degrees remain in school to get a Ph.D., M.D., D.D.S. or L.L.B., all of which certify three or more years of intensive occupational training. Consequently, almost all college graduates obtain training for a particular occupation before leaving school.

What role should schools play in the training of the 70 percent of the labor force who do not get a bachelor's degree? These workers account for the bulk of the nation's blue collar sales, clerical, and technical workers. The training requirements and intellectual demands of many of these jobs are quite considerable. In clerical jobs, for instance, the time and resources devoted to training a new employee during the first three months on a job have a value equal to 45 percent of the output of a worker with two years of tenure at the firm. Training costs during the first three months are 36 percent of an experienced worker's potential output for retail sales jobs, 38 percent for blue collar jobs, and 25 percent for service jobs (Bishop, 1985). Should these workers receive their initial occupationally specific training in school or on a job? Should this training be offered by high schools as well as postsecondary institutions? By what criteria should these decisions be made?

The primary justification of occupationally specific education must be an economic one. It must make the students better off economically. Making them no worse off is not good enough. If the economic effects of taking academic and occupational courses in school were equal, the public would probably want to substitute academic for occupational course work. Their preference for the academic has a rational base:

- Academic courses are less costly to teach (because class sizes are larger and space and equipment needs smaller);
- Employers expect to teach occupational skills to new hires who have not received training in high

Table 1

Extent of Occupational Specialization In Secondary and Postsecondary Education

Variables	1980-81		1967-68[5]	
	Certificates or Degrees (000's)	Percent Occupational	Certificates or Degrees (000's)	Percent Occupational
High School graduates	3,026	25[1]	2,702	24[1]
Completers or occupational programs of noncollegiate postsecondary schools[2]	1,109	100	N/A	N/A
Associate degrees awarded[3]	416	63	159	43[6]
Bachelor's degrees awarded[4]	935	67	632	51
Master's degrees awarded[4]	296	83	176	79
Doctorate degrees awarded[4]	33	100	23	100
First professional degrees awarded[4]	72	100	34	100

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[1] Estimate of percent vocational is based on self reports of seniors from surveys of the Class of '72 and the Class of '80 (High School and Beyond).

[2] Enrollments and Programs in Noncollegiate Postsecondary School, 1978. Some of the Associate degrees in occupational fields reported in Line 3 are also counted as completers in Line 2.

[3] Table 118, Digest of Educational Statistics.

[4] Table 100, Digest of Educational Statistics, 1983-84. A Ph.D. in any field was considered to be occupational preparation. The following fields were considered to be occupational preparation at the bachelor's and master's level: agriculture, architecture, business, computer and information sciences, communications, education, engineering, fine arts (performance), health professions, home economics, library science, military science, public affairs, and theology. The fields considered to be nonoccupational at the bachelor's and master's level were: area studies, biology, art history and music appreciation, foreign languages, letters, mathematics, physical science, psychology, social science, and interdisciplinary majors.

[5] The source for number of earned degrees was the 1969 Digest of Educational Statistics.

[6] The associate degree breakdown is for 1970-71 and is taken from Table 124 of 1977-78 Digest of Educational Statistics.

school, but they are unlikely to teach basic skills to their employees;

- Academic course work is better preparation for college than occupational coursework, so choosing an occupational curriculum inevitably reduces the ability of the student to change his/her mind about college and later go for a bachelor's degree;
- The public's educational goals are in part cultural and political, and nonvocational courses make greater contributions to these goals;
- Basic skills do not become obsolescent, while occupational skills do.

The key questions, then, are whether and to what degree those who receive occupationally specific training in school are actually more productive and require less training on the job than those who receive no such training. Are such students more likely to find employment? Are they paid higher wages? Which types of occupational training have the largest impacts? What are the economic tradeoffs between basic skills and occupational skills? What role should the federal government take in efforts to bring about improvements in the occupationally specific training provided by schools?

All of these questions need to be addressed by the National Assessment of Vocational Education. There is already a considerable body of research on some of these questions, so the first step in establishing a research agenda is to review what is already known. The second step is to define a set of options for federal policy that previous research suggests may be desirable. The final step is to identify what must be known (that can be feasibly learned within the time span of the Assessment) to set policy intelligently, and then to design studies that definitively answer the questions posed. The paper attempts to follow this three-step process for five critical issues affecting vocational education. The five critical issues that must be addressed are the following:

1. Priorities: basic skills vs. occupational skills? Are they complements or substitutes in use?
2. Does studying occupationally specific skills in school necessarily result in learning less basic skills?
3. Are the occupationally specific skills learned in school being used?

4. How large are the benefits of vocational education and what causes them?

5. Where are occupationally specific skills best learned?

The remainder of the paper is devoted to discussing each of these issues in turn. A short summary concludes the paper.

I. Priorities: Basic Skills vs. Occupational Skills. Are They Complements or Substitutes in Use?

Over the last 80 years, industrial psychologists have conducted hundreds of studies, involving over 100,000 workers, on the relationship between productivity in particular jobs and various predictors of that productivity. This enormous body of research has recently been reviewed and aggregated by Hunter and Hunter (1984), Reilly and Chao (1983), and others. Direct measures of both basic skills (aptitude tests) and vocational skills (job knowledge tests) have very large associations with reported productivity. This occurs regardless of whether productivity is measured directly or by supervisory ratings. Aptitude tests can be classified into three basic types, each measuring different abilities:

- General mental ability--General mental ability tests, such as the Scholastic Aptitude Test (SAT), focus on verbal, quantitative, spatial, and reasoning abilities. Thus, they test the competencies that are the prime objectives of schooling. School attendance has been shown to improve performance on these tests (Lorge, 1945). Improvements in education were probably responsible for the increase between World War I and World War II of one standard (the equivalent of 110 SAT points) in the average test scores of Army draftees.

- General perceptual ability--General perceptual ability is a combination of perceptual speed and spatial and mechanical ability. It includes the ability to perceive detail quickly, to identify patterns, to visualize objects, and to perform other tasks that rely on speed or accuracy in picking out an individual element from a mass of apparently undifferentiated elements. It also involves the ability to perceive spatial patterns and knowledge of mechanical and electronic principles and facts.

- Psychomotor ability--Psychomotor tests are used to determine the ability to manipulate objects physically. An example is a dotting test, which requires the test taker to place a single dot within each of a series of very small circles.

Table 2 presents correlations between each type of aptitude tests and job performance for a variety of specific occupations.

Table 2

Valildity of Alternative Predictors of On-the-Job Performance by Occupation

	Aptitude Test		
Occupation	General Mental Ability	General Perceptual Ability	Psycho-motor Ability
Managers	.53	.43	.26
Clerical	.54	.46	.29
Higher level sales	.61	.40	.29
Protective services	.42	.37	.26
Services	.48	.20	.27
Skilled trades & crafts	.46	.43	.34
Industrial (semiskilled)	.37	.37	.40
Vehicle operators	.28	.31	.44
Sales clerks	.27	.22	.17

Source: Summarized from Hunter and Hunter (1984)

The results provide important evidence that basic skills (the abilities measured by general mental ability tests) improve productivity in a great variety of jobs, including many of the jobs for which training is provided by high school vocational education programs.

The results summarized in Table 1 can be used to calculate the increase in productivity on a given job produced by a worker having a 110 point higher score on both the math and verbal SAT. Conservative calculations indicate that those with the higher scores are between 11 and 16 percent more productive in clerical jobs; 10 to 14 percent more productive in skilled trades, crafts, and service jobs; eight to 11 percent more productive in semi-skilled factory jobs; and six to eight percent more productive in vehicle operator and sales clerk jobs (Bishop, 1985).

Does the finding that basic skills are important to a worker's productivity imply that schools should deemphasize the teaching of skills specific to particular occupations? Not necessarily, for it is occupational and job-specific skills that make the worker more productive. When tests of job knowledge (occupational skills) compete with tests of general mental ability (basic skills) in predicting job performance measured by actual work samples, the job knowledge tests have by far the greater impact (Hunter, 1983). The finding that job knowledge had much larger direct effects on performance than cognitive skill per se implies that the major contribution of cognitive skills to productivity is that it helps the worker learn the job and occupationally specific skills that are actually being used to do the job.

Thus, basic skills and occupational skills are complements rather than substitutes. Occupational skills and knowledge are essential because they directly affect productivity. Basic skills are important primarily because they contribute to the learning of job specific and occupational skills.

It is sometimes argued that high school students should concentrate on basic skills rather than occupational skills because jobs are changing so rapidly that occupational skills learned in school quickly become obsolescent. This argument is sometimes preceded by the assertion that "we live in a new environment in which jobs are changing more rapidly than ever before." In fact, however, what evidence there is on changing skill requirements suggests that change is less rapid now than before. Rates of job turnover, rates of exit from agriculture, and overall technological progress are all lower now than in the first seven decades of the twentieth century. Workers have always had to learn new occupational skills. In most cases, new skills are learned as small modifications of old skills. Job-specific and occupational skills are generally hierarchical, and changes in skill requirements are typically incremental. Consequently, new skills generally cannot be learned until a foundation of job knowledge and older occupational skills has been developed. At some point every individual must start building his/her foundation of occupational skills. When the foundation building should begin is primarily a function of when the individual is able to decide which occupation he or she wants to pursue. Being able to make an intelligent, long-term choice about what to study is crucial because it is essential that knowledge and skills be used if they are not to deteriorate.

The rate at which people forget things they do not use is much greater than the rate at which knowledge becomes obsolete. The learning retention rates plotted in Figure 1 indicate that people forget much of what they learn if they do not use it (Pressey and Robinson, 1944). If a student studies French in high school (or college) but does not soon visit a French-speaking country or use the language in daily life, most of the language skills will be lost and the time devoted will have been largely wasted. Kohn and Schooler (1978) have demonstrated that even the very basic cognitive abilities tend to be lost if the worker's job does not call for their use. When we set priorities regarding what should be studied in school, we need to pay close attention to:

Figure 1

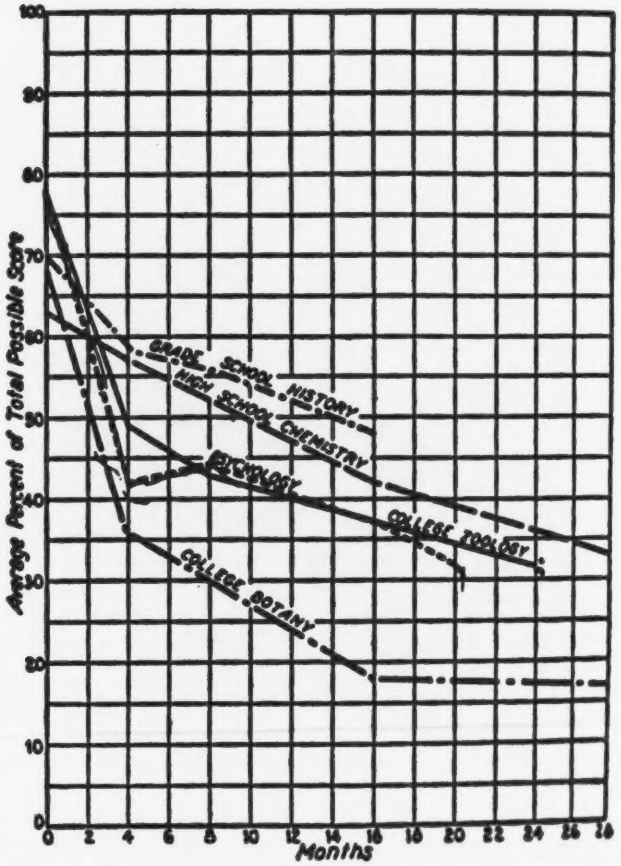

CHART 80.—Retention of one elementary school subject, one high school subject, and three college subjects for from 16 to 28 months after the end of the course. (After S. J. Bassett, *Johns Hopkins Univ. Stud. Educ.*, 1928, [illegible] E. B. Greene, in *J. Educ. Res.*, 1931, 24:262–273; S. R. Powers, *Teach. Coll. Contrib. Educ.*, 1924, No. 149, pp. 49–54; and P. O. Johnson, in *J. Educ. Psychol.*, 1930, 21:37–47.)

- Whether and how the skills and knowledge gained will be used within a few years of graduating;
- How the motivation to learn a particular subject is affected by the prospect of being able to use it;
- At what rate the skills and knowledge will be forgotten if they are not used;
- How easily the same material can be learned at some later time if it turns out to be needed and how much easier it is to relearn something than it is to learn it the first time.

Policy Implications

How specific skills and abilities influence productivity and employability is one of the most important factors that needs to be considered when deciding on curriculum requirements and the kinds of tests that should be used to certify competence and to help colleges make admission decisions.

Research Implications

The challenge facing both academic and vocational education is to prepare young people for a lifetime of on-the-job learning. To meet this challenge, educators need scientific evidence on issues like the following:

- What traits and abilities facilitate learning new skills on a job and becoming a productive worker? Is it study habits and self-discipline, reading and listening skills, reasoning (trouble shooting) skills, or specific knowledge bases (e.g., algebra, electronics, horticulture) that are essential to specific occupations?
- How are these traits and abilities developed in school and influenced by employment experiences and training on previous jobs?

There are many different opinions about these matters, not all of them equally valid. Opinion surveys of chief executive officers regarding what students should study in high school are of little value. These executives seldom have more than cursory interactions with employees with 12 or fewer years of schooling, and the information they might receive on these matters from first-line supervisors is anecdotal at best. Objective evidence can only be brought to bear on the issue by two kinds of studies: (1) studies of how wages depend on academic achievement, personality, educational background, occupational training, and work experience in large representative samples of workers and (2) studies of how productivity is affected by these same factors in samples of workers who do the same job and for whom measures of relative productivity are available. Both types of research should be undertaken. The first type of research is common, so it need not be discussed here. The second type is uncommon, so some discussion is necessary.

Studies of the association between job performance and various employment and training (E&T) inputs and outcomes are important because they provide evidence of E&T's impact on productivity that does not depend on the heroic assumption that an individual's wage equals his/her marginal product.[1] They also provide a test of the hypothesis that the social benefits of educational quality and achievement are considerably greater than the private benefits. In most large firms, nonexempt workers occupying the same job are paid essentially the same amount no matter how different their productivity (Bishop, 1985). Thus, a finding that a particular kind of educational achievement is associated with greater relative productivity on a great variety of jobs implies that that kind of achievement is under-rewarded by the labor market. Studies of the correlates of the productivity of individual workers have traditionally been the province of industrial psychologists. It will therefore be necessary to recruit industrial psychologists to study how the performance ratings of workers doing the same job depend on their occupationally specific skills, generic abilities, personality, and educational background and to suggest implications for vocational educational policy. The objectives of this analyses would be:

- To identify which generic skills have the greatest effect on how well a worker learns new job skills and how productive that worker eventually becomes and whether and how they vary by the cognitive complexity and other dimensions of the occupation.
- To determine whether these generic skills are teachable, where they are taught in school (e.g. math classes, vocational classes), and where they should be taught.

The expected contribution will be a better understanding of how generic skills, occupationally specific skills learned in a school, and occupationally specific skills learned on a job interact to produce more productive workers.

Research design, data and methods. The basic causal model that could be employed in these studies is shown in Figure 2. Large

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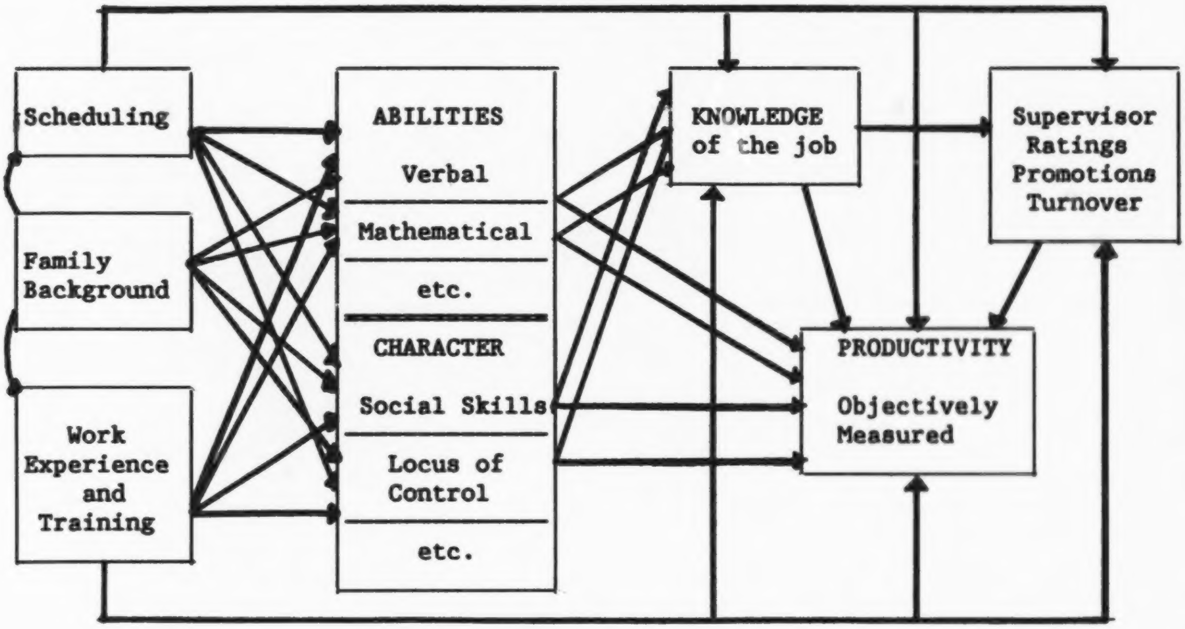
[1] When educational credentials are used to select people for jobs and/or retention at the firm is correlated with job performance, unbiased estimates of the causal impact of educational characteristics on a person's potential productivity are not obtainable through the analysis of data on job incumbents without correcting for selection bias. This is a problem that needs to be dealt with in the research.

Figure 2

Causal Model



Scheduling
Family Background
Work Experience and Training
ABILITIES
Verbal
Mathematical
etc.
CHARACTER
Social Skills
Locus of Control
etc.
KNOWLEDGE of the job
Supervisor Ratings Promotions Turnover
PRODUCTIVITY
Objectively Measured

nationally representative data sets such as the National Longitudinal Survey (NLS) youth cohort and High School and Beyond (HSB) are needed to estimate the left-hand side of this model, which examines how years of schooling, curriculum, quality of training, work experience, and family background influence the 10 subtests of the Armed Services Vocational Aptitude Battery (ASVAB) and HSB aptitude and personality scales. To estimate the right-hand side of the model, one needs two kinds of data: nationally representative longitudinal surveys for studies of how the abilities developed in school affect the sorting of people to jobs and to wage rates, and data on specific jobs for studies of the associations between skills and abilities developed in school and productivity on the job. Multivariate regression should be employed to examine which ASVAB subtests, which personality characteristics, and which E&T experiences are the strongest determinants of learning rates (measured by paper and pencil tests) and job performance (measured by work sample tests, supervisory ratings, promotions, and turnover). One of the important issues that could be addressed is whether we should increase the share of the classroom time devoted to math and science to something comparable to that in Japan. Two of ASVAB's subscales, automotive information and electronics information, measure skills that are specific to particular occupations, so the analysis would be able to contrast the payoff for occupationally specific knowledge to the payoff for general knowledge.

The data being collected for a mammoth Army contract, entitled "Improving the Selection and Utilization of Army Enlisted Personnel," are well adapted to addressing these questions. One of the data files that has been developed contains comprehensive data (e.g. ASVAB, Military Applicant Profile, skill qualification tests, end-of-training performance measures, and promotion data from the Enlisted Master File) on 196,287 FY 1981-1982 accessions into the Army. Most of the jobs to which enlisted personnel are assigned have close counterparts in the civilian economy, so the findings for this data base will have high transferability. Large size will make possible separate analyses for different occupations.

Still another extremely valuable data set is the highly detailed data on 12,000 soldiers across 19 military occupational specialties being collected in Project A of "Improving the Selection and Utilization of Army Enlisted Personnel." This data set "constitutes the most carefully scrutinized and broadest array of selection and classification tests ever used in selection and classification research" (Campbell and Eaton, 1984). It includes carefully designed work sample measures of productivity, computerized tests of psychomotor abilities, and both peer and supervisor ratings of a variety of performance dimensions. A study employing these data could assess the relative contribution of basic skills, occupational skills, and noncognitive factors in determining different dimensions of job performance, supervisor ratings, discharges, promotions, and work sample measures of output.

Still another data set that might be employed is a multi-firm selection validation study for entry-level clerical employees in the life insurance industry sponsored by the Life Office Management Association. The unique feature of this data set is its large size (6,500 employees at 91 companies) and the availability of data on personality traits, job turnover, and whether the firm would rehire employees who have left. Past research may have been unable to prove that personality influences job performance because those with real personality problems were not included in studies because they left the firm before job performance was assessed.

The fourth data set that is potentially available is the U.S. Employment Services General Aptitude Test Battery (GATB) revalidation data on 32,000 workers in 122 different jobs. This data file contains scores on all of the GATB subtests, education, job experience, and job performance. This data set can be employed to examine whether experience on a job is a substitute for or a complement of generic learning ability and whether there are diminishing returns to job experience and to learning ability.

II. Does Studying Occupationally Specific Skills in School Necessarily Result in Less Learning of Basic Skills?

Since the total number of courses that one can complete during high school is limited, an academic curriculum tends to restrict the number of vocational courses one can take, and vice versa. Does this mean that developing occupationally specific skills necessarily implies diminished basic and academic skills? Longitudinal data are essential to address this question because it is well known that students who have done poorly in academic courses in 9th and 10th grade are more likely to choose vocational courses in the 11th and 12th grade.

A longitudinal model was estimated in the sophomore cohort of the HSB data predicting the change between sophomore and senior years in test scores, grades, career plans, key attitudinal variables such as self-esteem and locus of control, and an index of student deportment (Bishop, 1985). The model included extensive controls for variables that may influence both curriculum and the outcomes. These include an array of socioeconomic background variables, base-year grades, test scores, attitudinal variables, base-year educational and occupational expectations, and parents' career expectations for their children. Numerous measures of curriculum were used to assess curriculum effects, including base-year self-reported curriculum track (vocational and academic), self-reported number of courses taken between the sophomore and senior year in a variety of subjects, and self-reports regarding whether the respondent had taken algebra II, trigonometry, calculus, physics, chemistry, biology, an honors English course, and an honors math course.[2]

The results of these analyses show that curriculum does, in fact, have a strong influence on many of these outcomes, but traditional measurement of curriculum by reference to track placement does not capture these effects. The traditional track variable (self-reported membership in the academic or vocational track) has little or no impact on any of the 11 outcomes. When, however, specific course descriptions are used (e.g. algebra II, physics), the effects of taking a college preparatory curriculum of calculus, trigonometry, algebra II, physics, and chemistry are striking (see Table 3).

Holding the total number of academic courses and their distribution across fields constant, taking the five college preparatory math and science courses listed above raised math and science performance by 3/4 of a grade equivalent, verbal test scores

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[2] See Endnote No. 1, which includes specific formulae and model estimates.

Table 3

Effects of Selected Curriculum Variables On Changes in Achievement, Attitudes, and Aspirations (Percent of a Standard Deviation)

		Curriculum Variables			
		4 Yrs. Math & Science in Jr. & Sr. Yr. (not College Prep	College Prep v. Non Non-College Prep	3 Years of Business/ Office	3 Years of Technical
Verbal test score	M	-9***	13***	7***	3
	F	-6***	10***	6***	0
Math test score	M	8***	29***	-4	6***
	F	9***	22***	-2	4
Science test score	M	-5	30***	-4	1
	F	-3	19***	0	-2
Civics test score	M	-8***	17*	0	2
	F	-8	12	10***	-1
Grade point average	M	-3	-19**	4	7**
	F	3	-18**	13***	7
Internal locus of control	M	0	8	-3	-5
	F	3	12	4	10
Self esteem	M	5	21**	11***	2
	F	3	11	6	1
Work orientation	M	7	3	5	-2
	F	-3	4	4	-2
Good deportment	M	9**	28***	-3	-1
	F	6	19***	12***	-3

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*Statistically significant at the 95 percent level.
**Statistically significant at the 99 percent level.
***Statistically significant at the 99.9 percent level.

Table 3
(Continued)

Effects of Selected Curriculum Variables
On Changes in Achievement, Attitudes, and Aspirations
(Percent of a Standard Deviation)

		Curriculum Variables			
		4 Yrs. Math & Science in Jr. & Sr. Yr. (not College Prep	College Prep v. Non Non-College Prep	3 Years of Business/ Office	3 Years of Techni-cal
Planned yrs. of schooling	M	-1	24***	9**	-4
	F	12***	11**	-1	-1
Planned occupation	M	11**	25***	-5	11**
	F	-9	16**	2	-5

*Statistically significant at the 95 percent level.
**Statistically significant at the 99 percent level.
***Statistically significant at the 99.9 percent level.

NOTE: Entries are coefficients scaled approximately as a percentage of a population standard deviation of the outcome being studied. For the test scores a one standard deviation improvement is roughly equivalent to a gain of three grade equivalents or a 110 point improvement on an SAT test. A one standard deviation improvement would cause an individual to move from the 50th to the 84th percentile on the characteristic, so impacts on percentile rank in class for grades or deportment can be calculated by dividing the coefficient by 3. The dependent variable was the change between the end of sophomore and senior years. The models used to derive these estimates contained a total of 75 control variables. Included among the control variables were the sophomore values on the 10 other outcome measures, a great variety of specific courses, years of courses in specific subjects taken during freshman and sophomore year and during junior and senior year, family background, self-assessed ability to succeed in college, and parental pressure to attend college.

by 1/3 of a grade equivalent, and civics test scores by 47 percent of a grade equivalent.[3] If a student takes four additional year-long math and science courses but avoids the more rigorous courses listed above, math test scores increase by 1/4 of a grade equivalent but verbal and civics test scores decline by an equal amount.

The results also indicate that vocational courses sometimes contribute more to the development of basic skills than watered down courses in academic subjects. Holding the academic course load constant, taking three full-year business and office courses raised verbal and civics test scores by 20 and 15 percent of a grade equivalent respectively. Taking three full-year courses in the technical area raised math performance by 15 percent of a grade equivalent. Trade and industry courses and the residual category of vocational courses had small negative effects on test score gains.

Why does taking a college preparatory curriculum in math and science have such salutary effects on a whole range of tests? In my judgment, the crucial difference is that college preparatory classes are more demanding than other classes. This is clearly the case in our data. The students who took all five of the college preparatory classes got significantly lower grades than those who took other courses in these fields. Apparently the key determinant of learning is the rigor of the courses taken, not the total number of academic courses or the total number of hours spent in a school building during a year.

A very different approach to the question of the effect of curriculum--comparing the effects of school policies designed to increase/decrease emphasis on academic competencies--comes to a similar conclusion (Hotchkiss, 1984). Controlling for school and location characteristics is, of course, crucial to the validity of this comparison. A total of 39 variables were used to control for curriculum, resources, climate, and teacher characteristics.[4] The emphasis placed by the school on college preparatory courses rather than vocational or nonacademic courses was measured by: the distribution of sophomores between vocational, general, and academic tracks; the number of math and science courses offered; the number of vocational courses offered; and the number of nonacademic and nonvocational courses offered. (The courses that were included in this latter category were art, driver education, ethnic studies, family living, sex education, and home economics.) The results are presented in Table 4. Increases in the number of math and science courses offered by the school produced substantial increases in performance on the verbal test, the science test, and the civics

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[3] Estimates of impact in terms of grade equivalents were made using the conservative assumption that at the 12th grade one standard deviation on the HSB tests was equivalent to three grade equivalents.

[4] See Endnote No. 2.

Table 4

Impact of School Level Curriculum Variables on Ten Outcomes (Standardized Coefficients)

Scores	Increase in Vocational Track at Expense of Academic	Increase in Vocational Track at Expense of General	Increase in Number of Vocational Courses	Increase in Number of Math & Science Courses	Increase in Non-academic and Non-vocational Courses
Verbal test	+.005	−.003	−.011**	.018***	−.009
Math test	.000	−.005	.003	.003	.003
Science test	.005	.000	−.005	.026***	−.006
Civics test	.001	−.014*	.008	.020**	−.023***
Educational expectations	−.025***	.008	−.016*	.005	.002
Occupational expectations	−.001	−.016*	−.003	−.014	.005
Deportment idex	−.0096	−.006	.008	.006	.008
Work values	−.0091	.008	−.008	+.004	.009
Self esteem	−.0021	.000	−.003	1.004	−.001
Locus of control	.0089	−.002	−.015*	.010	−.004

* $p \leq .05$.
** $p \leq .01$.
*** $p \leq .001$.

NOTE: Models control for socioeconomic background of the student, the social and racial composition of the student body, percent dropping out and attending college, and 35 other school characteristics.

test. Indeed, the number of math and science courses was the only school characteristic to have highly significant effects on three or more of the four measures of academic achievement. Increases in number of vocational courses offered by the school lowered educational expectations, internal locus of control, and verbal achievement but not math, science, or civics achievement. Increases in the number of nonacademic, nonvocational courses decreased the civics test score. The proportion of sophomores reported to be in academic, general, and vocational tracks did not have large effects on the basic skills.

These results are important for two reasons. First, they are further evidence that taking an advanced college preparatory curriculum does cause improvements in performance on the standardized tests. Second, they imply that a school's pattern of course offerings has important effects on learning, and that school boards and principals who choose to increase emphasis on academic coursework can achieve modest but real gains in academic achievement.

Policy Implications

The total number of academic courses taken does not matter nearly as much as the standards and content of courses that are taken. Legislated increases in the number of academic courses required for graduation will increase achievement only if the standards and content of the courses taken are upgraded.

If the increase in emphasis on math, science, and other college preparatory courses results in the noncollege-bound students taking fewer vocational courses, there will be a tradeoff, however. Noncollege-bound high school graduates who have taken many academic courses and no vocational courses and who do not go to college earn less in the years immediately after graduation than those who have taken vocational courses (Kang and Bishop, 1984; Kang, 1984; Campbell, Basinger, Dauner, & Parks., 1986). Ways must be found for the students who take a vocational concentration and plan not to attend college to get a solid grounding in basic skills and the math and science courses that are often considered to be solely for the students in a college preparatory curriculum. In order to develop the skills that will be essential for advancement in their careers, vocational students must be encouraged and perhaps required to take the more demanding math and science courses that they often avoid.

Clearly, almost everyone needs to be able to reason, solve problems, and communicate both verbally and in writing. Elementary/secondary education needs to place the highest priority on developing these abilities. The responsibility for achieving these objectives probably should not rest with English and math teachers alone; history, art, and vocational teachers should reinforce (i.e., demand) basic skills as well. In fact, however, vocational courses are often not organized in a way that requires students to employ basic skills. Students in vocational classrooms spend only three to seven percent of their time applying basic skills to learning vocational skills (Halasz and Behm, 1983; Halasz, Behm, & Fisch, 1984).[5] When these findings have been presented to vocational teachers, their reaction has often been "it is not my responsibility" (Halasz, personal communication). Time-on-task findings and teacher reactions would probably be similar in art, health, science, and many other courses. These attitudes should be changed. The newly developed principles of technology courses are a positive development but not sufficient on their own. Vocational students should be expected to learn some of their occupational skills from printed material. Verbal explanations and visual demonstrations by the teacher should not be the only mode of instruction. Vocational students need to get practice explaining job tasks to others and writing out instructions, for career advancement will depend as much on the ability to teach as on the ability to learn.

Research Implications

The studies reviewed earlier imply that the tradeoff between learning basic skills and learning occupationally specific skills is small. This average result may, however, hide important tradeoffs between the development of basic skills and certain modes of teaching occupational skills. Students who are taught math and language arts skills in vocational courses might be making great gains, while students who are taught hands-on skills using visual demonstration techniques might be losing ground in their basic skills. There might be tradeoffs between achieving a high placement rate and reinforcing basic skills. There is consequently a need for research on "what types of vocational education work best?" "Best" needs to be defined in a variety of ways: the development of basic skills, the development of occupational skills, training-related placement rates, earning gains, etc. Programs should be distinguished on a variety of dimensions:

- Comprehensive high schools versus vocational high schools;
- Full-time versus part-time attendance at area vocational-technical schools;
- Cooperative education versus classroom instruction;
- Competency-based instruction versus noncompetency-based instruction;

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[5] Basic skills time was defined as the use of reading, mathematics, and both oral and written communication skills by students in a vocational class. Examples were reading, writing, speaking, or calculating in conjunction with technical skills.

- The degree to which students have their specific individual competencies certified by the school rather than getting a diploma simply for attendance;
- Existence and vitality of vocational clubs;
- Amount of business community involvement in the program;
- Qualifications and business experience of staff;
- Vocational programs' emphasis on basic skills;
- Whether teachers or placement personnel are assigned responsibility for placing graduates in jobs;
- Whether and how students are taught job search techniques.

While analysis of HSB data will yield some insights into these questions, the data base does not really have sufficient numbers of vocational graduates to provide reliable estimates of the effects of many of the program dimensions mentioned above. Large samples are needed because field of study has large effects on outcomes and must be controlled when one examines program quality dimensions. A data set to address these issues must have the following qualities:

1. Large size (many tens of thousands of graduates).

2. Longitudinal data on labor market outcomes many years after graduation.

   This is important because some program characteristics may have only temporary effects on labor market success and other program characteristics may have a payoff only in the long run. This creates problems, however, for longitudinal surveys are very expensive. The solution to this problem is described below.

3. Good data on the characteristics of the individual programs that students participated in.

   Even at the same area vocational-technical school, program quality may vary considerably from field to field, so it is desirable to have detailed information on the characteristics of each program. Since it is costly to get information on the characteristics of programs, this implies that every student in the program should be studied.

4. An ability to control for the characteristics of individuals (such as ability and character) that influence

labor market success and that may confound estimates of the effect of program characteristics.

This requirement means one needs access to transcript information on grades, test scores, and deportment.

5. Data on educational outcomes that directly measure basic skills and knowledge and competence in one's occupation—in other words, competency tests in the occupation and in basic skills.

   The great advantage of this kind of data is that (1) it is available quickly, (2) it is not influenced by labor market demand factors, and (3) it allows a study of the impact of student achievement on labor market outcomes.

It is also very desirable for the data set to include similar longitudinal information on general track students who do not go to four-year college. Those graduates are an important comparison group. They enable one to control for differences among the labor markets faced by the graduates of different schools. A successful vocational education program is one that improves the labor market prospects of those served relative to what they would have achieved in the general or academic tracks at their high school. Comparisons across schools of the labor market success of graduates of specific programs are likely to be heavily influenced by labor market demand factors. Having data on nonvocational students in these same labor markets helps control for demand factors.

Research design. The high quality longitudinal study just described is quite feasible. Five years of data on employment and earnings can be obtained inexpensively from unemployment insurance wage records in 39 of the 50 states. (The Targeted Jobs Tax Credit (TJTC) study is making use of this data source and is analyzing data on nearly one million people.) In Ohio, vocational and basic skills competency exams are administered to the graduates of a large number of vocational programs. Other states could be included in the study by arranging for these exams to be administered there. Alternatively, the occupational competency tests developed by American Institutes of Research (AIR) or National Occupational Competency Testing Institute (NOCTI) might be used. The study might be conducted in approximately 100 area vocational-technical schools and comprehensive high schools. In the first year, the nature of the vocational programs would be described (based on interviews and in-class observations of a sample); entering juniors would be surveyed to obtain information on background and attitudes and Social Security numbers. Information from transcripts on grades and performance in basic skills and vocational competency tests would be obtained and analyzed in the third year of the study. In the fifth year of the project, wage record information would be collected, merged, and analyzed.

III. Are the Occupationally Specific Skills Learned in High School Being Used?

During their four years in high school, 1982 graduates took an average 2.3 Carnegie units of exploratory vocational courses (industrial arts, home economics, typing I, etc.), 2.1 units of occupational vocational courses, and 17.2 units of other courses. The 27 percent of these graduates who described themselves as specializing in a vocational field obtained 2.8 units in exploratory vocational courses, 3.7 Carnegie units in occupational vocational courses, and 14.9 units in other areas (The Condition of Education, 1984).

This implies that the 73 percent of students who report they are not specializing in a vocational field account for 67 percent of the students in exploratory courses and 52 percent of the students in occupational courses. The heavy representation of nonspecialists in exploratory courses is understandable and appropriate. It is, however, quite puzzling that a major share of the students taking occupational vocational courses do not have career aspirations in the field. Even among the graduates who have taken two or more occupational vocational courses in a specific area (the concentrators, limited concentrators, and concentrator explorers of the typology developed in Campbell, Orth, & Seitz, 1981), many students apparently have career objectives that are not furthered by their vocational coursework. Twenty-eight percent of these student enter a four-year college or university after high school (unpublished tabulation of 1983 NLS Youth provided by Paul Campbell).

Why are so many noncareer-oriented students dabbling in occupational vocational education? Counselors and vocational teachers report that some of the students taking vocational courses are there to avoid more difficult academic subjects or to get permission to take a job during part of the school day. A more favorable interpretation of the dabbling is that it reflects uncertainty about career goals. However, the occupational courses offered by high schools are not really designed for career exploration. They generally require a large time commitment. The student learns about only one potential career, not about alternatives. The classroom/lab environment is quite artificial. Taking a job, an unpaid internship, or interviewing and shadowing workers in an occupation as in Experience-Based Career Education (EBCE) is probably a better way to learn whether one wants to pursue a particular occupation as a career.

Another indicator of the lack of career orientation among many vocational students is the low rates of training-related placement. Most studies of the training relatedness of the jobs obtained by graduates of vocational programs are based on questions like, "On your present job, how much do you use the vocational training you received in high school or area vocational center?" (Bice & Brown, 1973). Typically, more than half of the respondents report they are using their training in their job. They may not, however, be referring to the occupationally specific component of their training when they report using their training. A more rigorous way of measuring training-related placement is to match a workers' current occupation against his/her field of training. By this definition, only 27.4 percent of the employed graduates who had been out of school between one and 10 years currently had a training-related job (very broadly defined) in the 1983 National Longitudinal Survey of Youth. Only 21 percent of employed vocational graduates had a training-related job two years after high school graduation in HSB data (Campbell et al., 1986). Felstehausen's (1973) study of 1971 vocational graduates in Illinois found training-related placement rates of 27 percent in business occupations, 17 percent in trade and industry, 52 percent in health, and 20 percent in agriculture. Conroy and Diamond's study (1976) of Massachusetts graduates obtained a training related placement rate of 29 percent for business and 37 percent for trade and industry. In contrast, six months after passing a German apprenticeship examination, 68 percent of those with civilian jobs were employed in the occupation (much more narrowly defined) for which they were trained (Federal Institute for Vocational Training, 1986).[6]

Policy Implications

A discussion of this issue is postponed to Section IV.

Research Implications

There is a great need for a thorough study of why training-related placement rates are so low when fields of study are matched against occupations and what can be done to increase them. Do the students seek work in their field of training and leave it only when they cannot find a related job? Or did many students never really plan to enter the field for which they were training? Does the quality of the training or the state of the local labor market have important effects?

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[6] The U.S. rate of training related placement might have been somewhat higher if measured 6 months after high school graduation but if the German definitions of relatedness had been applied to the U.S. data, the training related placement rate would have been even lower. High unemployment rates no doubt contribute to the low rates of training related placement in the U.S. However, aggregate unemployment rates are now equally high in Germany so the differential between the countries in training related placement cannot be attributed to differentials in the general tightness of labor markets.

In metal working, electronics, and health areas, employers generally expect more training than most high schools can provide, and many of the students who pursue these programs continue their education at a junior college or technical school. Continuing one's education in the same field should be considered a positive outcome and be studied in its own right. To what degree are the students who pursue occupational training in high school able to place out of the beginning-level courses at postsecondary institutions and either complete their program early or achieve a higher level of competence?

One hypothesis that needs to be tested is that the low training-related placement rate in occupational training provided by American schools is a consequence of limited employer involvement in the training. Mangum and Ball (1986) have found in their analyses of NLS data that employer-controlled training institutions have much higher training-related placement rates. Using a procedure of matching training fields against jobs, they found that the proportion of male graduates who had at least one job in a related field was 85 percent for company training, 71 percent for apprenticeship, 52 percent for vocational-technical institutes, 22 percent for proprietary business colleges, and 47 percent for military trainees who completed their tour of duty. The rates for females were 82 percent for company training, 59 percent for nursing schools, 61 percent for vocational-technical institutes, 55 percent for proprietary business colleges, and 49 percent for military training. Clearly the problem of low training-related placement rates is not confined to high school vocational education.

The NLS and HSB data sets are clearly very well suited for analyzing these questions. Waiting time models would seem to be especially appropriate. In addition, however, there should be a review of past studies that have asked vocational program completers why they did not stay in the field for which they prepared.

Studies of the extent to which material learned in academic classes is used and/or remembered need to be sought out and reviewed. The next follow-up of HSB should ask questions about the use of material taught in vocational and academic classes, and an analysis of this issue should be commissioned.

IV. How Large are the Benefits of High School Vocational Education and What Causes Them?

Should we care whether students who pursue occupationally specific training during high school find jobs in the field for which they are trained? On the face of it, it would seem wasteful to train young people to do x, and then have them take a job in another field. Yet some of the leading experts on vocational education argue that the focus on training-related placement rates is misplaced. For instance, Harry Silberman (1982) believes that the primary purpose of secondary vocational education is:

> to promote full human development through exposure of the learner to work experience as part of the education process . . . . The purpose of the work is to further the education of the student; the work is subordinate to the education process; it is work for education (p. 299).

If this goal were being achieved, we would expect vocational students to benefit from their vocational education regardless of whether they find a job in the field for which they are trained. Sadly, however, there is no evidence that vocational education benefits its clients—the students who take occupational courses and the employers who hire them—when the student takes a job unrelated to the occupation for which training was received. In fact, there is considerable evidence that the students who take vocational courses do not benefit economically from the training if their job is in an unrelated field. This has been demonstrated by the work of Campbell et al. (1986), which has been summarized in Tables 5 and 6. The regressions from which these results are taken control for the following: sex, minority status, handicapping condition, limited English proficiency, test scores, grade point average, family background, attitudes, absenteeism, discipline problems, deportment, past and current college attendance, employment during high school, aspirations in 8th grade, region, and rural/urban location. The analysis of HSB also controlled for presence of a spouse and child.

Table 5 presents estimates of the impact of high school vocational education on labor force participation and the employment rate (probability of employment conditional on labor force participation). Relative to general track students, vocational concentrators have a 3.6 percentage point higher labor force participation rate and a 4.1 point higher employment rate in NLS data. Limited concentrators and concentrator explorers are somewhat less well off.

The analysis of HSB data examines whether the employment impacts of vocational education depend on wanting (or being able to find) a training-related job. Vocational graduates were divided into two groups: those whose present or most recent job was training-related and those whose job was not training-related. The concentrators and limited concentrators in the training-related category had a 2.7-3.3 percentage points higher employment rate. Vocational graduates working outside their field of training often had lower employment rates than those who took a general curriculum in high school. The association between training relatedness and the labor force participation rate is particularly strong. Concentrators and limited concentrators working in related jobs had a 9.6-11.5 percentage point higher probability of being in the labor force than the high school

Table 5

Impact of Vocational Education on Employment (Percentage Point Effects)

	National Longitudinal Survey Data	
	% Time in Labor Force	% Employment/ Labor Force
Concentrator	3.6*** (2.87)	4.1*** (4.18)
Limited concentrators	2.3* (2.20)	1.6* (1.93)
Self report vocational	1.4 (1.08)	3.4*** (3.43)
Self report academic	.1 (1.28)	2.5* (1.51)
Academic	-3.7*** (3.23)	-.7 (.76)
R^2	.162	.126
Number of observations	6953	809
Mean of dependent variable	74.5	85

	High School and Beyond Data			
	% Time in Labor Force		% Time in Employment/Labor Force	
	Training Related	Not Training Related	Training Related	Not Training Related
Concentrator	9.6*** (4.6)	2.3 (1.62)	3.3** (1.96)	.6 (.53)
Limited concentrators	11.5*** (5.07)	1.8 (1.54)	2.7* (1.70)	-1.1 (1.25)
Concentrator explorer	6.4** (2.02)	-1.2 (.84)	1.9 (.86)	-1.1 (1.02)
Self report vocational	3.0* (1.74)		.1 (.07)	

Table 5
(Continued)

Impact of Vocational Education on Employment
(Percentage Point Effects)

	High School and Beyond Data			
	% Time in Labor Force		% Time in Employment/Labor Force	
	Training Related	Not Training Related	Training Related	Not Training Related
Self report academic	0.8 (.31)		-2.0 (.98)	
Transcript defined academic	-4.3*** (3.01)		-.6 .57	
R^2	.127		.067	
Number of observations	6098		5414	
Mean of dependent variable	47.1		92.3	

Source: Table 14 of Campbell, Basinger Dauner & Parks, Outcomes of Vocational Education for Women Minorities, the Handicapped, and the Poor. All equations controlled for sex, minority, status, handicapped, limited English proficient, socioeconomic status, region, rural-urban location, test scores, current enrollment, postsecondary education, employment during high school, and grade point average. The HSB models contain additional controls for occupation, presence of a spouse or child, aspirations in 8th grade, attitudes, absenteeism, and discipline problems.

graduates who took a general program.[7] Those not working in related jobs had only a 1.8 to 2.3 point higher labor force participation rate.

Table 6 examines the effect of vocational education on wages. High school graduates who took a vocational concentration obtain significantly higher wage rates and higher monthly earnings only when their job is related to their training. When their job is not related to their training, they do not receive higher wage rates than students who have pursued an academic or general program of study in high school.

High training-related placement rates are also important because vocationally trained workers are more productive and less costly to train than other workers doing the same job only when the job is related to their training. The evidence for this statement comes from statistical comparisons of two workers doing the same job.[8] The data are presented in Table 7, which has been summarized from Bishop (1982). Compared to those without vocational training, new hires who had received school-provided vocational training that is relevant to their job required 6 percent more. Those with relevant training were 4 percent more productive in the first two weeks, 6 percent more productive during the next 10 weeks, and 6.6 percent more productive after a year or so at the firm. Those with nonrelevant vocational training were less productive initially and insignificantly 1.4 percent more productive after a year at the firm.

These findings imply that the private and social benefits of vocational education derive from the occupationally specific skills that are developed. Some of the skills taught in vocational classes are transferable—useful in a great variety of occupations—but skills taught in nonvocational classes are transferable as well. Vocational classes are no better at instilling valuable transferable skills than nonvocational classes. In other words, vocational education as now practiced is not a better way of preparing youth for generic jobs than more academic forms of education. Those who justify vocational education as an alternative method of teaching generic skills are describing an educational program that probably exists in only a few schools. From my observation of vocational classrooms and conversations with vocational teachers, the present-day reality is that outside of the career exploration and principles of technology courses, most vocational teachers are concentrating on

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[7] One has to be in the labor force at least one week to be in a training related job, so the association between the two reflects both directions of causation.

[8] See Endnote No. 2, which shows the formulae and model estimated.

Table 6

Impact of High School Vocational Education By Training Relatedness of Job (Percent Difference from General Curriculum)

	Hourly Wage		Monthly Earnings	
Variables	TR	NTR	TR	NTR
Concentrator	9.8*** (3.77)	.8 (.49)	9.8** (2.44)	5.8** (2.25)
Limited concentrators	8.5*** (3.37)	.2 (.17)	10.1*** (2.62)	.1 (.05)
Concentrator explorer	9.0*** (2.57)	-.4 (.26)	1.08** (2.01)	2.3 (.93)
Self report vocational	3.6* (1.76)		3.2 (1.03)	
Self report academic	2.8 (.85)		1.8 (.36)	
Transcript defined academic	-1.2 (.71)		-4.5* (1.69)	
R^2	.103		.232	
National Longitudinal Survey Youth Cohort				
Concentrator	8.1*** (2.85)	-2.8 (1.31)	17.2** (3.98)	-1.4 (.44)
Limited concentrators	5.3** (1.97)	-1.0 (.59)	8.2* (2.03)	-2.6 (.99)
Concentrator explorer	.3 (.07)	2.3 (1.10)	4.9 (.84)	-.1 (.02)
Self report vocational	1.8* (.68)		2.6 (.67)	
Self report academic	2.2 (1.08)		3.5 (1.14)	

Table 6
(Continued)

Impact of High School Vocational Education By Training Relatedness of Job (Percent Difference from General Curriculum)

	Hourly Wage		Monthly Earnings	
Variables	TR	NTR	TR	NTR
Transcript defined academic	-.6 (.35)		-3.8* (1.46)	
R^2	.275		.336	

Source: Table 16 of Campbell, Basinger Dauner & Parks, _Outcomes of Vocational Education for Women Minorities, the Handicapped, and the Poor_. Coefficients from regressions predicting the log of the hourly wage rate and the log of monthly earnigs have been multiplied by 100 to approximate percentage impacts. The regressions included controls for the following: sex, minority status, handicapped, limited English proficient, test scores, grade point average, family background, attitudes, absenteeism, discipline problems, department, past and current college attendance, employment during high school, aspirations in 8th grade, region, and rural/urban.

occupationally specific skills even when many of their students have no desire or realistic chance of getting a job in the field.

Policy Implications: Local

Some have proposed eliminating occupationally specific programs from the high school and telling students to get occupationally specific training at a postsecondary institution. However, many of those being served by high school vocational education have no desire to spend another one or two years in school. Postsecondary vocational programs also have their own problems--very high dropout rates and unimpressive training-related placement rates (better than those for secondary vocational education to be sure but not in any way satisfactory) (Mangum & Ball, 1986). Furthermore, for high school vocational graduates who find training-related jobs, the payoff is quite large--a 20 to 30 percent increase in earnings.

The solution is to attack the training-related placement problem head on. Rates of placement in jobs or further schooling related to one's training should remain as one of the key evaluation yardsticks

Table 7

Impact of Vocational Education (At All Levels) On Training Costs and Productivity (In Percent)

Variable	Received Vocational Training in a School Relevant to Job	 Not Relevant to Job
Training time	-7.3	6.3
Productivity		
in first 2 weeks	8.6**	-3.0
in next 10 weeks	6.1**	-.5
Current or most recent	6.6***	1.4

**Impact of relevant vocational education is significantly larger than the impact of nonrelevant vocational education at the .05 level (two-tail test)

***Impact of relevant vocational education is significantly higher at the .01 level (two-tail test)

Source: Table 5 of Bishop, The Social Payoff from Occupationally Specific Training. High school vocational graduates account for only about 30 percent of the vocationally trained workers in the sample. Most of the rest received their training at a 2-year postsecondary institution.

for vocational education. One of the main objectives of any reform of vocational education at both the secondary and postsecondary levels should be an increase in the share of its graduates who get and stay in jobs or further education in a field which makes use of the training received in school. To accomplish this objective, the following reforms are recommended:

- Students should not be allowed to overspecialize. Vocational programs should be for broad occupational areas such as electronics rather than in narrow fields such as robotics. The goal of broad occupational training should not be achieved by diluting what is taught. With respect to the pace of instruction and time on task, most vocational classrooms are similar to academic classrooms. A good deal of time is wasted. Much more could be accomplished if standards were raised.

- Cooperative placements during summers and the final school year should be a part of every vocational student's program. This would both increase rates of training-related placement and force the contraction of programs for which these is little employer demand. The primary reason for this suggestion is the belief that work habits and most occupation-specific skills are better taught in the context of an actual job. (Exceptions might have to be made to this principle in rural communities in which a large share of the students leave the community after graduating.)

- During the first year of the program, five to 10 hours of class time should be devoted to how to search for work and how to make a good impression in an interview. Each student should receive video tape feedback of a practice interview.

- Vocational teachers should be expected to keep in touch with their former students over the phone. They should keep records of each student's employer, wage rate, future plans, a detailed description of the student's job, the on-the-job training (OJT) being received, and the skills taught in school that are being used on the job (matched against the student's competency profile). During these conversations the teacher could ask for suggestions about what should be added to and/or dropped from the curriculum. These conversations would identify which graduates need assistance in finding training-related jobs and might also yield job leads for new co-op placements and for other graduates.

- The vocational teacher should be responsible for placing his/her students, not a placement director. McKinney et al. (1982) found that schools with placement officers actually had lower training-related placement rates than schools that did not. Leaving the responsibility for placement with the vocational teacher forces more involvement with local employers and helps to foster a mentor relationship between teacher and student.

- Teachers should assist their students, current graduates, and past graduates to find training-related jobs, and their success in this area should be evaluated and rewarded. (They might receive $100 for each time they find a training-related job for a graduate and $100 for each year beyond the first year the student stays in that job.) Larger awards might be made for placing handicapped students.

Rewarding teachers for placing their graduates in a job or further schooling that is training-related is appropriate because the outreach work takes time and deserves compensation, and because an incentive to devote time to the task is necessary. It is, however, also a reward and incentive for setting high standards in the classroom and being an effective teacher, for high training-related placement rates are much easier to achieve when past graduates have done well on the job and the program has developed a local reputation for quality.

- The strength of a student's commitment to a particular occupation should be an important consideration in choosing which students are admitted to programs for which there is excess demand. Programs which have high placement rates and excess demand should be expanded and teachers should be compensated for taking extra students.

Occupational (as distinct from exploratory) vocational courses should not be treated as just another of a student's course options. Students should be allowed to take these courses only when:

- They have participated in a systematic career selection program and discussed the choice with a guidance counselor.
- They have had a part-time job in the field or have interviewed and shadowed people who work in the field.
- Both parents and the student have had at least two conferences with a guidance counselor on the subject of career choice.
- A "contract" has been signed between students, parents, vocational teacher, the school, and employer representatives. The student would need to state an intent to seek employment in the field after graduating and promise to complete a certain amount of training in the field and achieve a particular standard. The school and employer representatives would promise to find the student a training-related cooperative placement for the senior year and a job after graduation if the student fulfills his part of the bargain.

Screening students for interest might initially reduce the number of students in occupationally specific educational programs. But if it succeeds in raising the economic payoff to occupationally specific training (as I am confident it will), additional students will be attracted into the field in much the same way that high wages for computer programmers have attracted students into that field.

Policy Implications: State

One of the causes of the poor fit between occupational plans and occupational enrollment choices is the practice of recruiting or assigning students to occupational programs in order to achieve state-mandated enrollment targets. Teachers in need of bodies to meet the target are often willing to accept and sometimes actively recruit into their program students who they know do not want or have only a low probability of getting a job in the field. State reimbursement of the costs of occupational education should not be keyed to October enrollments. A formula should be devised that recognizes outcomes rather than inputs and that focuses on students rather than programs. The formula should promote the discontinuation of training programs that do not place a respectable number of graduates in jobs or further education related to the training.

The outcomes that would be included in reimbursement formulas could include some combination of the following: cooperative job placements, graduations, checklists of behavioral objectives achieved, placements of graduates in jobs or further education that is training related, earnings gains, and scores on occupational competency exams or state licensing exams. All of these measures would need to be adjusted for the capabilities of the students entering the program (e.g. nature of learning disability, or scores on standardized tests) and for labor demand conditions in the local labor market. They should also probably be adjusted for field of study (e.g., expected rates of training-related placement might be higher for distributive education and for office education). Since costs vary by field, state reimbursement per placement might also vary across fields. The use of training-related placement rates in reimbursement formulas is clearly feasible, for it has been implemented in two states, Florida and South Carolina.

The primary objection to this suggestion is that the placement rates that are currently reported to state departments of vocational education are not comparable across districts and programs, are subject to manipulation, and suffer from a nonresponse problem. There is no reason, however, why a more reliable reporting system cannot be developed. The Department of Labor is requiring all states to establish a wage reporting system keyed to a worker's Social Security number. This system identifies the name, address, and industry of the student's employer and could be the basis of a follow-up system providing valid measures of training-related placement rates and, without any follow-up, could provide estimates of the earnings impact of the vocational education.[9]

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[9] In many cases the match between the industry and the field of training will be close enough to require no follow-up at all. Where the nature of the job is not clear from the industry code, a card could be sent to the employer requesting a description of the employee's job and possibly also asking for an evaluation of the training the employee had received. If no response is received from the card, an independent survey firm could be contracted to telephone the employer. Where no match turned up in the system, an effort could be made to call the student's parents. The list of students and their job classifications would be sent to the vocational teacher and the school district. This would give the teacher the opportunity

Local districts might be given the option of allowing students who have not signed a contract and who do not have career plans in the field to take vocational courses alongside the "contract" students. These students would not, however, be reimbursable and should probably be required to demonstrate some minimum competency in basic skills area before being allowed to take the elective.

Policy Implications: Federal

At present, federal policy pays lip service to the objective of high training-related placement rates, but does little to achieve the goal. It continues to fund programs with poor placement records. Serious consideration should be given to (a) limiting the federal dollar contribution to local programs that meet or exceed a target rate of placement in training-related jobs or further education and (b) keying the federal contribution to the number of students so placed and the length of time they stay in a training-related job.

This could be done by establishing a national system for measuring training-related placement rates and other desired outcomes, adjusting these placement rates for local labor market conditions, and then allocating federal dollars directly to school districts (rather than to the states) on the basis of their performance. If one does not want to bypass the states, an alternative approach would be to adopt the Job Training Partnership Act (JTPA) model: make the entire federal payment to the state conditional on the state's establishing a performance standards system that meets certain minimum standards. The dollars allocated on the basis of performance standards would need to exceed 10 or 20 percent of the total instructional cost of occupationally specific education.

Research Implications

If performance standards are to receive serious consideration, it would be desirable to undertake a study of how they could be implemented and the distributional consequences of alternative federal funding formulas. The study would have two objectives:

- Developing and demonstrating a system of generating valid and reliable measures of performance for vocational training programs that adjusts both for local labor market conditions and for the abilities and background of the students served; and
- Improving our understanding of how to make occupational training programs more effective.

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to appeal and correct misclassifications.

Both secondary and postsecondary schools in six to 12 wage-reporting states would be randomly sampled. Schools that keep reasonably good records (including Social Security numbers) on their past students could be assigned to a retrospective study in which school records on 1984 graduates would be merged with five or more years of wage records from the Unemployment Insurance wage reporting system and a survey of the current employers of the youth. Schools that do not have such records would be assigned to a prospective study in which all students scheduled to graduate in 1987 would be surveyed and tested and their Social Security numbers would be obtained. The wage reporting system would be used to follow up on these students nine months after graduation and every 24 months thereafter for six years. All follow-ups would include students who enrolled in occupational vocational courses and a sample of students who did not take such courses. The telephone interviews with employers would ask for information on the graduate's initial and current job responsibilities, wages, skill level, job performance, and about any on-the-job training, turnover, or promotions that may have occurred. After this information had been obtained, the employer would be asked whether he/she was aware that the worker had received vocational training, when and how he learned of this training, what he thought of it, and how the worker had been recruited initially.

The validity of other program performance measures would be evaluated by comparing employer reports to industry classifications obtained from the wage reporting system and to school reports of training-related placement rates. The reliability and validity of employer reports of job performance and skill level could be studied through an in-person reinterview of a small subsample of the employers and parallel interviews of the worker and coworkers.

The schools would be asked to provide detailed descriptions of each of their vocational programs. For each student in the study, information would be obtained on courses taken, grades, extracurricular activities, family background, and scores on tests of basic skills taken both before and after the vocational training. In the analysis, the outcome variables would be regressed on the characteristics of the student, local labor market conditions, dummies for the vocational field, and various indices of the character of the vocational program. The coefficients on the first two categories of variables (and possibly on the third category, the field dummies) would be used to generate performance standards targets. The coefficients on the fourth category of variables would yield important insights into which types of vocational training are most effective and how this varies with the performance outcomes considered. Finally alternative federal funding formulas and performance measures could be simulated to see how they would change the distribution of federal dollars.

Selection bias. All past research on the effects of vocational education and of training-related placement are subject to various forms of selection bias. As Willis and Rosen have pointed out, the students who self-select into vocational programs probably have a comparative advantage in that form of training and the jobs for which they prepare. This, of course, biases the estimates of the effect of vocational training. State-of-the-art studies should be commissioned that attempt to deal with this issue *using a variety of statistical models of the selection problem*. One should not, however, expect to obtain robust answers to critical policy questions from such studies. Experience with the Continuous Longitudinal Manpower Survey (CLMS), evaluations of the Comprehensive Employment and Training Act (CETA), and other studies has demonstrated that results are often quite sensitive to minor changes in specification and are sometimes completely unreasonable (Job Training Longitudinal Survey Research Advisory Panel, 1985; LaLonde, 1986). The Department of Labor has decided to evaluate JTPA by running a massive classical field experiment with random assignment of JTPA clients to experimental and control status. This was a wise choice, and the Department of Education should pursue the same strategy.

The only way to find out for sure how vocational education should be delivered is to undertake field experiments. Such experiments need not create ethical problems. First, there are many vocational schools and programs with long queues of young people trying to get in (e.g., the specialized schools in New York and Chicago) and where random selection of a portion of the entering class is both feasible and ethical. Studies of these schools, using those denied entry as the control group, would tell us the overall effect of occupationally specific education. Other field experiments would focus on the impacts of different ways of delivering vocational education (cooperative vs. noncooperative or competency-based instruction and credentials vs. traditional). Everyone in a school or program would receive the same treatment, and comparisons would be made with earlier graduating classes and with other schools not adopting the new approach. The major disadvantage of the experiments is that it is doubtful that such experiments could be mounted and analyzed within the three-year time frame of the Assessment. *I would recommend that the Assessment staff start a series of field experiments of the type described above and ask Congress to appropriate money for the follow-ups of graduates that are implied.*

In the absence of field experiments utilizing random assignment, policy must be based on the analyses of nonexperimental data. The currently available set of estimators that correct for selection bias are subject to severe multicolinearity problems and are consequently not very robust. Most policymakers are legitimately suspicious of such estimators. In my opinion, the best hope for sound policy advice comes from standard analyses of high-quality longitudinal data sets (baseline surveys conducted before entry into vocational training which contain measures of a variety of abilities, skills, and attitudes). The studies using HSB and NLS data cited earlier are of this type, and in my view are good enough to support the very gross policy recommendations offered in this paper.

V. Where are Occupationally Specific Skills Best Learned?

A strong case can be made that the occupationally specific skills that many high school vocational programs are trying to teach in a lab or shop setting are best learned on a job. Work habits are also best learned on a job. Evidence of the great value of on-the-job learning comes from the success of the German apprenticeship system and from longitudinal studies of American youth. Students who worked while in high school are generally much more successful in the labor market than those who did not hold down a job. Figure 3 summarizes the results of one such study by Kang and Bishop (1984).

Holding a job during the summer between the junior and senior years had large effects on wages, employment, and earnings. For boys, 30 hours of work per week during the summer between the junior and senior years led to 8 percent higher wage rates, 12.5 percent more employment, and 11 percent higher earnings in the period immediately following high school. An equivalent total number of hours worked during the senior year (i.e., averaging 10 hours a week) raised the wage rate of boys by 1.5 percent, employment by 3 percent, and earnings by 8 percent. Holding a job during junior year in high school had practically no effect on labor market success after school. The wage rates of girls were not affected by whether they worked during the summer or during the school year. There were employment and earnings effects, however, which were larger for summer than for during-year work.

The strongest effects of work experience in high school appear right after graduation and in the succeeding two years (Kang, 1984). Their magnitude and importance diminish over time. Those who worked 10 hours per week through the last two years in high school, for example, earned 8 to 20 percent more in the first three months after graduation than the students with no work experience in high school. But this relative advantage declined to about 5 percent during the 16th through 21st month after graduation.

Are these labor market benefits bought at the expense of any undesirable effects of having a job while in school? A good way to isolate the effect of work is to examine its effects on changes in test scores, GPA, deportment, and educational plans between sophomore and senior year. This was done with the HSB survey. The effects that were found are summarized in Table 8. Work did not have effects on internal locus of control, self-esteem, work orientation, or planned occupation.

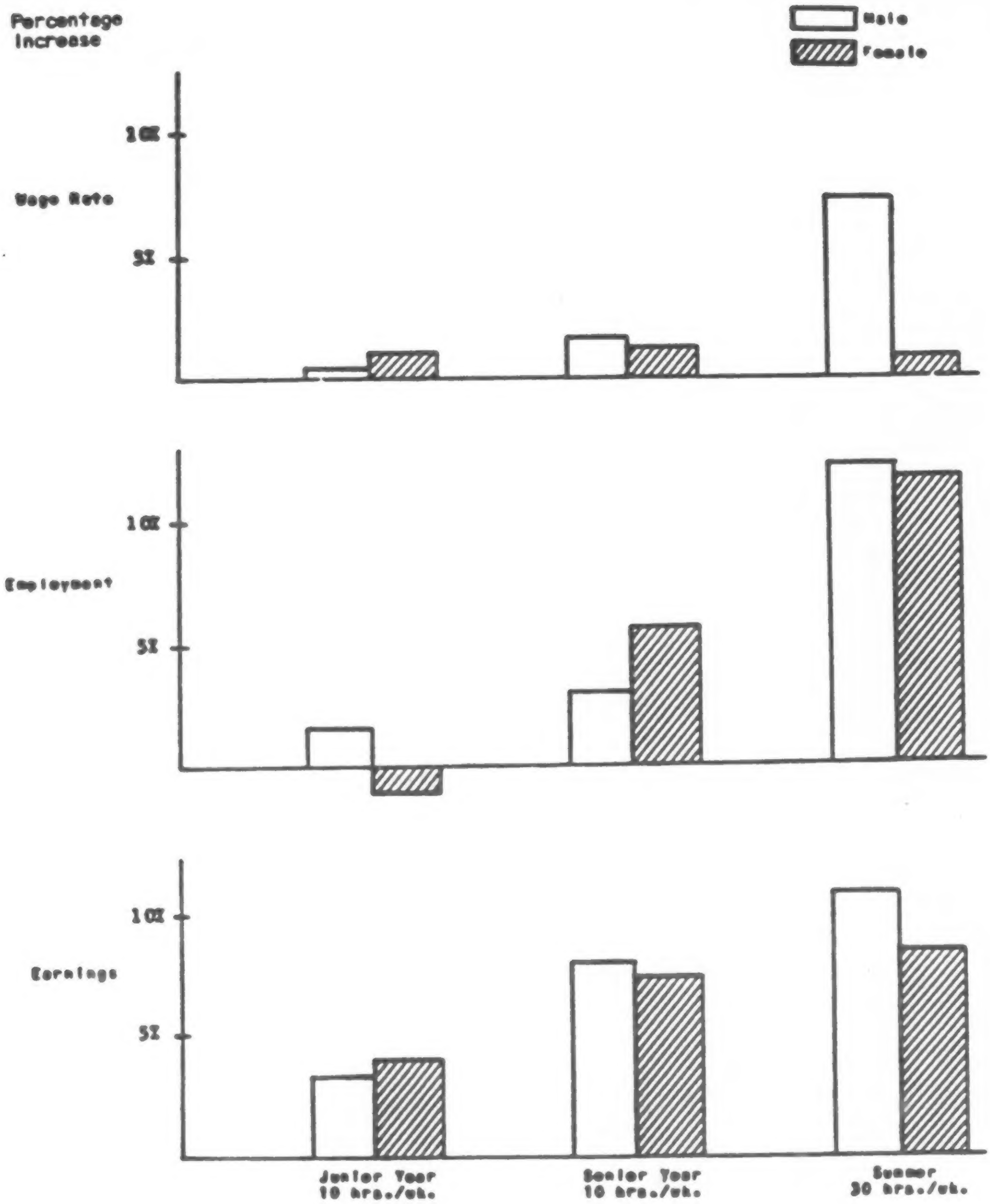

Figure 3. Effects of work during high school on labor market success in the two-year period after graduation.

Table 8

Effect of Work During High School On Changes In Achievement, Attitudes, and Aspirations (Standard Deviation)

		Average Hours per Week		
		During School		Summer
		Junior 10 hrs./wk.	Senior 10 hrs./wk.	30 hrs./wk.
Verbal test score	M	-4***	1***	-6***
	F	-3***	0	-4***
Math test score	M	-4***	0	-3*
	F	-3***	-1	-3*
Science test score	M	-4***	0	-2
	F	-1	-1	-2
Civics test score	M	-3***	1	-5*
	F	-2	-1	-1
Grade point average (SD=.7)	M	-4***	1	-5*
	F	-4***	1	1
Good deportment	M	-4***	0	-3
	F	-3*	1	1
Planned yrs. of schooling (SD=2.5 yrs.)	M	-3***	0	-5
	F	-2**	-2**	1

*Statistically significant at the 95 percent level.
**Statistically significant at the 99 percent level.
***Statistically significant at the 99.9 percent level.

NOTE: Entries are coefficients scaled approximately as a percentage of the population standard deviation of the outcome being studied. For the test scores a one standard deviation improvement is roughly equivalent to a gain of three grade equivalents or a 110 point improvement on a SAT test. A one standard deviation improvement would cause an individual to move from the 50th to the 84th percentile on the characteristic, so impacts on percentile rank in class for grades or deportment can be calculated by dividing the coefficient by 3. The dependent variable was the change between the end of sophomore and senior years. The models used to derive these estimates contained a total of 75 control variables. Included among the control variables were the sophomore values on 10 other outcome measures, dummies for a great variety of specific courses, years of courses in specific subjects taken during freshman and sophomore year, and during junior and senior year, family background, self-assessed ability to succeed in college, and parental pressure to attend college. The models employed a first difference specification.

Working during the junior year had small negative effects on test scores, grades, and aspirations. Working during the summer also had somewhat smaller negative effects on test scores (particularly verbal scores) but not on aspirations. In contrast, working during the senior year had no effects except very small negative ones on verbal scores and on planned years of education.

Working during the senior year had minimal effects on test scores and on educational plans. These, when combined with the very large positive effects on the employability of graduates who did not go to college, imply that students who are not planning full-time college attendance should be encouraged to get part-time employment during their senior year. The clear indication is that such experience helps them prepare for full-time entry into the labor market.

Policy Implications: Cooperative Education

A major implication of these results is that cooperative education should be greatly expanded at both secondary and postsecondary institutions. (A fuller description of the rationale of cooperative education is provided in Ruff et al., 1982; Lewis and Fraser, 1982; and Barton, 1981). My specific recommendations are the following:

- All vocational students who achieve a minimum performance standard in the first year of their occupationally specific education should be placed in a cooperative job related to their training during summers and the final year. In order to ensure that high school students have enough time to complete a strong program in the basics, release time from school for a cooperative job should not exceed about 12 hours a week except in extraordinary circumstances.

- The minimum performance standard should be set at a level such that (1) at least 80 percent of entrants can expect to attain the standard and (2) all students who meet these standards can get and keep a cooperative job.

- Handicapped students would have their own individualized performance standard.

- Students who do not meet the standard would be dropped from the program unless they found a job on their own that was related to their training.

There will be no difficulty finding cooperative placements for clerical and distributive education students. There may, however, be difficulties in placing health, trades, and technical students.[10] In order to help place these students and ensure that the jobs really offer training, co-op staff should facilitate applications for learners' waivers that allow co-op students to be paid 75 percent of the minimum wage. The training costs in these jobs are significant, and the lower wage during the training period is quite justified. In Germany, for example, first-year apprentices are generally paid only one-fourth of what they will make when the apprenticeship is completed. Paying below the minimum wage in the training slots is also desirable because it ensures that the students are in the program because of the opportunities to learn a skill rather than just to earn money and get out of school.

A comprehensive list of competencies would be developed for each broad occupational category. The teacher and the employer advisory committee would decide which of these competencies need to be taught in school prior to entering a cooperative placement, which are best taught on a job, and which are best taught at school during the final year of the program. The co-op contract would specify the competencies the employer is to teach. The student would receive a competency profile checklist at the beginning of the program and the competencies developed would be recorded on this document as they are learned. The competency profile would also serve as a credential that assists in the placement of students in jobs and further training.

Policy Implications: Subsidize Increases in Employer Training

If on-the-job training is a more effective way of developing many occupational skills than classroom training, why not turn most occupational training over to firms? The answer is that employers will probably not do the training that schools do not do. The social rate of return to employer-provided training is extremely high (Bishop et al., 1985), but the private rates of return to employer investments in training are much smaller. Private rates of return for employers are low because much of the training is useful in other firms and workers cannot be prevented from going to work for a competitor. To forestall this turnover, employers are forced to pay high wages to trained workers so many of the benefits of the training inevitably go to the trainee, not the trainer. This suggests that trainees should pay for the training by accepting a lower wage in the years right after leaving school or when entering a new occupation. However, young workers cannot borrow to finance this training (Hubbard and Judd, 1986) and cannot afford to work at extremely low wages while they are training. The progressivity of the income tax means that young trainees will pay high marginal tax rates on the benefits of the investment but receive little tax subsidy of the costs of the investment. They will not make the large sacrifice of current income to undertake the training unless extremely high rates of return are promised. A further source of externalities is the difficulty employers have in assessing the general training provided by other employers and the resulting lack of reward for such achievements (Bishop, 1985).

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[10] Employers who train handicapped and disadvantaged youth are eligible for Targeted Jobs Tax Credits. The co-op coordinator should aggressively market these tax credits as a way to induce employers to train the students who are most difficult to place.

As a result, from a social point of view, employees and employers are underinvesting in on-the-job training yielding skills useful in many firms. The appropriate policy response is stimulation of employer-provided training rather than cutbacks in funding of school-based occupational training. If efforts to stimulate on-the-job training are successful, a gradual scaling back of school-based occupational training might be contemplated. Customized training is one possible approach to stimulating employer training, but it suffers from some inherent limitations. The transaction costs of arranging such programs are relatively high, and much of the customized training apparently substitutes for training that employers would have provided anyway (David Stevens, personal communication). The most effective way to stimulate an increase in on-the-job training is to subsidize increases in their training investments.

A marginal training subsidy (MTS) would offer a partial subsidy of a firm's training expenditures above a threshold level. It is an idea whose time may be coming. Congressional interest in the concept is growing and has resulted in bill HR-1219, sponsored by Congresswoman Johnson and 33 other members of the House, that offers a 25 percent credit for increases in "aggregate amount of expenses paid or incurred by the taxpayer during the taxable year in connection with the training of employees." Approved training programs are defined to include (a) registered apprenticeship programs, (b) cooperative education (as defined by section 521 (7) of the Carl Perkins Vocational Education Act), (c) training programs carried out under supervision of an institution of higher education (as defined by section 1201(a) of the Higher Education Act of 1985), (d) "any employer-designed or sponsored program which meets such minimum requirements with respect to supervised on-the-job experience and classroom instruction as the Secretary of Labor shall prescribe by regulations," and (e) "any other program for improving job skills directly related to employment which the Secretary of Labor may approve" (HR-1219, 1986).

The bill leaves a great deal to the discretion of the Secretary of Labor. One of the major issues that would need to be decided would be whether to subsidize the 90 percent of all training that is informal or to limit the subsidy to formal training programs. Measuring the costs of informal training is difficult, but an attempt should be made because subsidizing only formal training will distort choices between formal and informal training.[11] The subsidizable costs of informal training would be limited to trainee time and trainer time during the first year of employment or during the first three months before or after a major promotion and change in job responsibility. If the training is formal, certain additional expenses—books and materials, rental on teaching machines and equipment or office space dedicated entirely to training, and payments to training vendors—would be eligible for subsidy. Formal training might be subsidized regardless of length of tenure or whether the worker received a promotion.

The line between production and training is difficult to draw. The French have been dealing with this definitional problem for many years as a result of the legal obligation they place on firms to spend at least 1.1 percent of their wage bill on training if they are to avoid paying a penalty tax. Their most effective mechanism for ensuring that the training expenses claimed are indeed legitimate has been the requirement that all companies with more than 100 employees have a training advisory committee with worker representation. A similar requirement might be placed on large firms receiving subsidy from a MTS.

Another way to insure the legitimacy of the training would be to require that trainees be given a written description of the purposes and nature of the training at its outset and award a certificate describing the number of hours of formal or informal training, skills taught, and, where appropriate, the competence achieved at its completion. These certificates would be more than audit trails. They would encourage both trainer and trainee to take the training more seriously, provide a recognition and reward for the worker's growing competence, and help the worker find a job that makes use of the new skills should he or she leave the firm.

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[11] A trainee would be considered to be engaged in formal or informal training if he or she is receiving group instruction, being instructed by a computer, reading manuals or instruction booklets, watching other do the work, or being shown the work. A trainer, supervisor, or coworker's time would be considered to be engaged in a training activity only if 100 percent of the trainer's attention is devoted to the training purpose. If any output is produced during a training activity, it would have to be given to the trainee, discarded, or given away. The following tests could be used to define a promotion for purposes of calculating subsidizable training expenses: there would have to be a new job title, noticeably different job duties, a wage increase of at least 6 percent above the standard seniority or cost of living increment, and the individual could not have held that particular job before. In order for new employee training to be subsidizable, it would have to be associated with a wage increase by the end of that year of at least 10 percent over and above the rise in the cost of living.

The key to a cost-effective MTS is setting a threshold that minimizes windfall payments—tax credits for training expenditures that would have occurred regardless of the existence of the subsidy. The approach taken by HR-1219 is to offer a tax credit for training expenses that exceed the average of the preceding five years. During the phase-in period, the firm's tax year containing December 31, 1984, would be the threshold. The marginal research and development (R&D) credit defines its threshold in basically the same way. There are some difficulties in using past training expenditures as the threshold in a marginal credit, but these were surmounted in the R&D credit and can no doubt be surmounted in a training credit.

The primary disadvantage of using a lagged five-year running average as the threshold is that increases in training this year reduce the firm's eligibility for subsidy during each of the following five years. This reduces the value of the tax credit to the firm. Once it is fully in operation in 1990, a $100 increase in training in 1990 provides the firm with a $25 tax credit but it also lowers the tax credit by $5 in 1991, 1992, 1993, 1994, and 1995. The present value of the tax credits generated by this $100 increase in training is only $10.05 not $25 (assuming a 20 percent discount rate).[12] Even worse, the running average updated threshold creates an artificial incentive to reduce training expenditures in a recession (exactly when society would like firms to hoard and train labor for the future). When a firm is not hiring, training costs are reduced and its training expenditures will often fall below the threshold. Once the threshold is pierced on the downward side, the tax credit creates an incentive for further reductions in training expenditures because by doing so, the firm lowers the thresholds it will face in each of the succeeding five years. If the firm anticipates being above its threshold during the next five years, the present value of the tax credits generated by a $100 reduction in training during a recession year is $14.95. This last problem can be avoided by only using years in which training exceeded its threshold to update the threshold.

The political realities are such that any new tax credit is likely to have an expiration date. This increases its incentive effect, for the fact that future thresholds will be higher takes on reduced importance if the continuation of the program is uncertain. The disadvantage of temporary credits, however, is that it is costly for a firm to redesign training, so a tax credit with a short life will not have as powerful an effect as one with a long life.

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[12] The problem is even more severe during the phase in period. Assume the firm pays taxes based on fiscal years starting in October. If it increases training by $100 in FY 1986, it gets the $25 tax credit but its 1987 threshold is raised by $50, its 1988 threshold is raised by $33, its 1989 threshold raised by $25, and its 1990 and 1991 thresholds are raised by $20. This can reduce future tax credits by as much as $37 (twelve dollars more than the benefit received in FY 1986). This problem can be avoided by basing the threshold more heavily on expenditures in the year that precedes the initiation of the subsidy.

The way to maximize incentive effects is to base thresholds on the training expenditures of years prior to the announcement of the tax credit and update this threshold with statistics that the firm's own behavior does not affect (e.g., a wage index or growth of training expenses in the industry) or that are not particularly influenced by the firm's response to the training credit (firm's wage bill). If there is concern about the reliability of estimates of the costs of informal training for years like 1984 and 1985, there could be a separate threshold for informal training expenditure at a percentage of the firm's wage bill that rises with the firm's rate of turnover.

A subsidy above a threshold has some important advantages over an obligation to spend a minimum amount on training:

- Firms that are big trainers (and therefore probably efficient trainers) of skilled workers would always face an incentive to expand their training.
- In France, where there is an obligation to spend 1.1 percent of the wage bill on training, the great majority of employees work at firms which exceed their obligation to spend, so at the margin, there is no public encouragement of additional training for the majority of French workers.[13] A subsidy above a threshold avoids this problem.
- Paperwork is reduced because some firms would not apply for a subsidy in most years. Year-to-year variations in training expenditures are likely to be large at small firms. Such firms would most likely spend above the threshold only in years in which there is a major expansion of employment or the installation of new equipment.
- Employers who feel the administrative burdens of the subsidy are too high are free not to participate.

All employers—profit making, nonprofit and governmental—should be eligible for the marginal training subsidy if their training expenditures exceed the threshold defined for their organization.[14] In order for incentive effects to be maximized, employers must feel they are assured a larger subsidy payment if they increase their training investment. Together, these two considerations imply that the MTS should be administered as a subsidy entitlement, as a tax credit against a broad-based tax on the firm's wage bill like Federal Unemployment Insurance Tax (FUTA) or Social Security tax, or as a tax credit against income taxes that can be sold to other firms.[15] The MTS would be financed either out of general revenue or a special training tax on the wage bill of all employers.

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[13] For more on the French mandate to spend, see Benedick (1983).

The MTS has a number of important advantages:

- The social benefits of on-the-job training are probably just as large as the social benefits of occupationally specific training provided by schools. The MTS would create an incentive for firms and workers to generate more of such benefits, and would reduce currently prevailing distortions of the choice between these two modes of providing occupationally specific training.
- Since the employer pays 67 to 90 percent of the cost of training, there is always an incentive to be efficient.
- The choice of which jobs to train for and how to do the training is made by the employer not by a school or government official or the trainee. The employer is the person best able to project the firm's future need for skilled workers and to select the best method of training for those skills.
- The certificates awarded at the end would be a source of pride for employees. By signalling to other employers what had been learned, the certificates would improve the trainee's marketability.
- The inclusion of the costs of informal training in the definition of subsidizable training expenses is fair to

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[14] To insure that employers who receive an MTS subsidy were aware of the program at the time it might influence their behavior, it could be required that the employees make a preliminary application before July 1 of the calendar year for which a subsidy is sought.

[15] If the MTS is a subsidy, subsidy payments would be taxable income. If the MTS is a tax credit, the firm would have to reduce its reported Social Security or FUTA tax payments by the amount of the tax credit.

small business, and reduces the tendency of the subsidy to distort choices between formal and informal training.

- While the MTS is not directly targeted on the unemployed dislocated worker, it will reduce unemployment nevertheless. The MTS reduces unemployment in two ways:
  - It encourages firms to hire and train new workers, and to retrain rather than lay off workers whose skills were becoming obsolete.
  - It encourages the firm to expand the supply of skilled workers rather than engaging in a bidding war for the limited supply of already trained workers, thus producing an acceleration of inflation.

The MTS has as its objective expansion and intensification of on-the-job training. Only two small reforms of current practice are proposed—training advisory committees at firms with more than 100 employees and providing trainees with a certificate describing the training that has been received.[16] All the really important decisions—who is to be trained, what is to be taught, and how it is to be taught—are made by the employer and to a lesser extent by the worker. Workers influence these decisions by bidding for jobs that require training, by selecting an employer who provides the desired training, and by the commitment that is given to learning the material that is presented.

Expenditures on formal training in the workplace have been estimated to be $30 billion annually. Informal on-the-job training has been estimated to cost $180 billion annually (Carnevale, 1986). Consequently, covering all employers and all kinds of training means costs can be kept down only if the subsidy rate is set relatively low, the definition of subsidizable expenditure is restrictive, and the threshold is set relatively high. With a threshold set equal to base-year training expenditures, about 10 percent of training expenditures would probably be eligible for tax credits in the first year and about 30 percent in the fourth and fifth years. If training tax credits must be deducted from training expense in calculating tax liability, a 15 percent subsidy rate on formal training may be roughly estimated to cost $300 million the first year and $900 million in years four and five—(.15) (1- marginal tax rate) $3 billion = $300 million. If the elasticity of demand for training were only .5, the increase in training that would be generated would be $1.5 billion.

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[16] To the extent that the accounting rules used to distinguish training activities from production activities affect the way training is conducted, this is an unfortunate, unintended consequence of the necessity of defining a dollar quantity of training expenditure for each firm.

Research Implication

The research needed to back up an increased emphasis on cooperative education has already been described in the previous section. If a direct subsidy of employer training were to be given serious consideration, the primary need would be for a classical field experiment in which a randomly selected group of 50 small establishments were offered a subsidy like the one described above and their behavior were compared to a control group.

VI. Summary

In my view, school-based occupationally specific education must get serious about raising the rates of training-related placement if it is to achieve its economic potential. Entry into these courses should be limited to those serious about pursuing the occupation, and teachers and programs need to be evaluated on the basis of their ability to achieve high rates of placement in related jobs. Employers should become much more involved in delivering occupational training. Teachers would no longer be sole instructors for occupationally specific skills. Cooperative employers might in fact become the primary instructors for these skills. The teacher's role would become one of mentor and facilitator of learning and job placement.

A comprehensive program of research for the National Assessment of Vocational Education would include the following:

- A conference on what traits and abilities facilitate learning new skills on a job and becoming a productive worker, with industrial psychologists as the paper givers and economists and vocational educators as the reactors;
- Longitudinal research on what types of vocational education work best, using competency tests and wage record files;
- Study of why training-related placement rates are low;
- Development of valid and practical performance measures for vocational education;
- Classical field experiments testing alternative delivery mechanisms; and
- Classical field experiment testing the effect of a marginal training subsidy.

ENDNOTES

1. These courses were selected from a more complete list of courses to represent math and science coursework generally taken during or after the sophomore year in high school. The specific model estimated was:

$$Y_{it} - Y_{it-1} = X_{it-1} + \phi C + \theta Y_{j \neq i, t-1} \qquad i = 1....11 \quad j = 1....11$$

where

Y_{it} = the "i"th outcome variable measured at the end of senior year. (e.g. math test score)

Y_{it-1} = the sophomore year measure of the "i"th outcome variable

$Y_{j \neq i, t-1}$ = a vector of sophomore year measures of outcome variables other than the "i"th

X_{it-1} = a vector of variables characterizing background and curriculum coursework variables measured in the sophomore year

C = a vector of variables describing the courses taken in junior and senior year

ϕ = a vector of coefficients measuring the impact of coursework on learning and career aspirations

2. This analysis of longitudinal data from the sophomore cohort of High School and Beyond predicted the level of the 10 outcome variables listed in Table 4 measured at the end of the senior year as a function of a long list of variables characterizing the student's background and behavior measured at the end of the sophomore year (including the 10 outcome variables) and 39 variables describing the character of the high school. The 5 variables measuring course offerings and the academic versus vocational emphasis of the school are described in the text. The other 34 school characteristics included the following: percent Hispanic, percent Black, percent not speaking English at home, mean family income, dropout rate, control (Catholic, other private vs. public), bussing, court orders, unionization, teacher strikes, facilities, whether the last school levy passed, teacher student ratio, ratio of teachers aides to teachers, percent of teachers with M.A. or Ph.D. or with more than 10 years of experience, teacher absences, entry pay, school participation in Upward Bound and co-op ed, competency test, ability grouping, average daily attendance, school deportment index, school problem index based on principal reports, school mean of sophomore reports of school quality index, school mean of student school rating index, and number of class hours per year.

3. The data employed in the analysis provided information using 550 pairs of recently hired workers employed in the same or a very similar job. The following model was estimated:

$$Y_1 - Y_2 = A (D_1 - D_2) + B (X_1 - X_2)$$

where

$Y_1 - Y_2$ = is the difference between the productivity or required training of person 1 and person 2

D_1, D_2 = a dummy indicating that person 1 or 2 had obtained vocational training from a school that was relevant to the job for which he/she was hired

$X_1, (X_2)$ = a vector of control variables for circumstances of the hire, and the new hires other credentials. When current productivity is Y, tenure and tenure squared are included in the X's.

REFERENCES

Barton, P. E. (1981). Vocations and education policy: A federal perspective. Washington, DC: National Institute for Work and Learning, National Institute of Education.

Bendick, Jr., M. (1984). Dislocated workers and midcareer retraining in other industrial nations. In K. Hollenbeck, F. C. Pratzner, & H. Rosen (Eds.), Displaced workers: Implications for educational and training institutions (pp. 189-208). Columbus: The National Center for Research in Vocational Education, Ohio State University.

Bice, G. R., & Brown, R. (1973). Selected information and vocational-technical education in Tennessee for the school year 1972-73, information series No. 20. Nashville, TN: Tennessee State Department of Education, Division of Vocational-Technical Education. Tennessee University Knoxville, Occupational Research and Development Coordinating Unit. (ERIC Document Reproduction Service No. ED 091 516).

Bishop, J. (1985). Preparing youth for employment. Columbus: The National Center for Research in Vocational Education, The Ohio State University.

Bishop, J. (1982, November). The social payoff for occupationally specific training: The employers' point of view. Columbus: The National Center for Research in Vocational Education, The Ohio State University.

Bishop, J., & Kang, S. (1984). Why do employers underinvest in on-the-job training? In J. Bishop (Ed.), Hiring and training works (pp. 59-106). Columbus: The National Center for Research in Vocational Education, The Ohio State University.

Campbell, P. B., Basinger, K. S., Dauner, M. B., & Parks, M. A. (1986). Outcomes of vocational education for women, minorities, the handicapped, and the poor. Columbus: The National Center for Research in Vocational Education, The Ohio State University.

Campbell, P. B., Orth, M. N., and Seitz, P. (1981). Patterns of participation in secondary vocational education. Columbus: The National Center for Research in Vocational Education, The Ohio State University.

Carnevale, A. P. (1986, January). The learning enterprise. Training and Development Journal.

Conroy, Jr., W. G., & Diamond, D. E. (1976, Spring). The impact of secondary school occupational education in Massachusetts. Lowell, MA: University of Lowell, College of Management Science. (ERIC Document Reproduction Service ED 122 095).

Federal Institute for Vocational Training. (1986). *The transition of young people into employment after completion of apprenticeship in the 'dual system'*. West Germany: The Federal Institute for Vocational Training.

Felstehausen, J. L., et al. (1973, June). *Follow-up report on Illinois "class of 71" occupational program alumni, final report*. Charleston: Eastern Illinois University, Center for Educational Studies. (ERIC Document Reproduction Service No. ED 087 866).

Grant, W. V., & Lind, C. G. (1978). *Digest of education statistics 1977-78.* Washington, DC: National Center for Education Statistics.

Grant, W. V., & Snyder, T. D. (1984). *Digest of education statistics 1983-84.* Washington, DC: National Center for Education Statistics.

Halasz, I. M., & Behm, K. S. *Time on task in selected vocational education classes*. Columbus: The National Center for Research in Vocational Education, The Ohio State University.

Halasz, I. M., Behm, K. S., & Fisch, M. R. (1984, January). *Influences on secondary and postsecondary vocational-technical student time on task*. Columbus: The National Center for Research in Vocational Education, The Ohio State University.

Hauser, R. M., Sewell, W. H., & Alwin, D. F. (1976). High school effects on achievement. In W. H. Sewell, R. M. Hauser, & D. L. Featherman (Eds.), *Schooling and achievement in American society* (pp. 309-343). New York: Academic Press.

Hotchkiss, L. (1984). *Effects of schooling on cognitive, attitudinal, and behavioral outcomes*. Columbus: The National Center for Research in Vocational Education, The Ohio State University.

Hubbard, R. G., & Judd, K. L. (1986). Liquidity constraints fiscal policy and consumption. *Brookings papers on economic activity*, *1*, 1-60.

Hunter, J. E. (1983). Causal analysis, cognitive ability, job knowledge, job performance, and supervisor ratings. In S. Lundy, F. Zedeck, & S. Cleveland (Eds.), *Performance measure and theory*. Hillsdale, NJ: Lawrence Erlbaum.

Hunter, J. E., & Hunter, R. F. (1984). The validity and utility of alternative predictors of job performance. *Psychological Bulletin*, *96* (1), 72-98.

Job Training Longitudinal Survey Research Advisory Panel. (1985, November). Recommendations. Submitted to OSPPD of the Employment Training Administration.

Kang, S. (1984). Time profile of youths' labor market outcomes: An analysis of high school and beyond data." In High school preparation for employment. Columbus, OH: The National Center for Research in Vocational Education, The Ohio State University.

Kang, S., & Bishop, J. (1984). The effects of curriculum on the non-college bound youths' labor market outcomes." In High school preparation for employment (pp. 95-135). Columbus, OH: The National Center for Research in Vocational Education, The Ohio State University.

Kay, E. R. (1984). Enrollments and programs in noncollegiate postsecondary schools 1978. Washington, DC: National Center for Education Statistics.

Kohn, M., & Schooler, C. (1978). The reciprocal effects of substantive complexity of work and intellectual flexibility: A longitudinal assessment. Amoncon Journal of Sociology.

LaLonde, R. J. (1986, September). Evaluating the econometric evaluations of training programs with experimental data. The American Economic Review, 76(4), pp. 604-620.

Lewis, M. V., & Fraser, J. (1982, June). Increasing community involvement in cooperative vocational education. Columbus, OH: The National Center for Research in Vocational Education, The Ohio State University.

Lorge, I. (1945). Schooling makes a difference. Teachers College Record, 46, 483-492.

Mangum, S., & Ball, D. (1986, March). Military service, occupational training and labor market outcomes. Columbus, OH: Center for Human Resource Research, The Ohio State University.

Meyer, R. (1981). Vocational education: How should it be measured? Cambridge, MA: Urban Institute, Harvard University.

Plisko, V. W. (Ed.). (1984). The condition of education. Washington, DC: National Center for Education Statistics, U.S. Department of Education.

Pressey, S., & Robinson, F. (1984). Psychology and new education. New York, NY: Harper and Brothers Publication.

Reilly, R. R., & Chao, G. T. (1982). Validity and fairness of some alternative employee selection procedures. *Personnel Psychology*,*35*, 1-62.

Ruff, R. D., Lewis, M. V., Orth, M. N., Shylo, B. J., & Fraser, J. L. (1982, January). *An examination of the desirability of expanding cooperative-type work experience efforts*. Columbus, OH: The National Center for Research in Vocational Education, The Ohio State University.

Silberman, H. F. (1982). Problems of cooperation and coordination in vocational education. In *Education and Work: 1982, Eighty-first Yearbook of the National Society for the Study of Education*.

Wilms, W. W. (1975). *Public and proprietary vocational training: A study of effectiveness*. Lexington, MA: Lexington Books. (ERIC Document Reproduction Service No. ED 100 459).

DETERMINANTS OF EXCELLENCE IN VOCATIONAL EDUCATION

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Introduction

For the past 25 years, conventional wisdom has held that the most effective and most exemplary vocational education program is the one that most successfully places its graduates in jobs—preferably but not necessarily high-paying jobs with growth potential—and that satisfies the largest proportion of employers. Those criteria of success have been applied equally to high school, postsecondary, and adult programs despite the fact that the goals of the three have differed.

The largest of these three types of programs on the basis of expenditures and enrollments, high school vocational education is part of broader state compulsory education; as such it must comply with rules and regulations established for public education by the states. Postsecondary and adult programs are voluntary and designed under the assumption that entrants have sufficient levels of basic competencies to participate.

Most yardsticks currently used to measure success in all forms of vocational education are short-term and based on immediate labor market outcomes. Determinants of "exemplary" programs are those conditions that vocational educators believe prepare a person most effectively for a particular job. They include the modernity of equipment and curriculum and the occupational experience of instructors as well as occupational outcomes. Thus, schools most likely to be considered exemplary tend to be highly specialized, occupation-intensive, and located in urban centers where resources can be concentrated sufficiently to provide up-to-date equipment and offer a wide array of programs.

The question policymakers now face is whether the assumptions about both goals and means that have undergirded vocational education in the past are still valid and whether they adequately meet the demands of the new labor markets that are quickly emerging in the changing economy. If they do, then why has vocational education received so little attention from the many task forces and groups examining public education in an economic context? Why have so many business leaders effectively turned their backs on vocational education in the high schools while still strongly embracing postsecondary vocational education?

Vocational educators, faced with growing resistance to the costs and doubts about the benefits of more specialized programs in the high schools, are responding in three ways. Some deny that vocational education in its present form is unable to adapt to the changing economy, and they work harder to update equipment and course content. Others fall back on educational equity as a rationale for support, asserting that there is a sizable portion of the student population who will drop out of school if the only kind of education available to them is academic and theoretical. Still others maintain that a modified vocational education program is capable of transmitting basic skills and, if designed in career clusters, can provide needed flexibility; and they leave specialization to the postsecondary institutions. The three camps represent different approaches to preparing youth and adults for work, all of which have been used in the past but whose influences on programs have ebbed and flowed with changing economic and social conditions. In this paper I argue:

(a) That the yardsticks that have been used over the past quarter century to judge vocational education programs' effectiveness reflect national economic and social conditions, and that those conditions and the types of programs they generated have changed over time and are about to change once again;

(b) That technological and organizational changes are the primary influences on changes in goals and expectations and that the major determinants of exemplary programs for the rest of this century will be basic skills and the ability to learn and adapt to new situations;

(c) That current organization, curricula, and delivery mechanisms for vocational education are based on work in a production-oriented, material-based economy and are not suited for teaching basic and flexible skills for a work force in a service-oriented, information-based economy; and

(d) That the high school program that best meets the new needs of the economy and the society and that responds most effectively to technological and organizational change is one that not too long ago was considered an anachronism in an industrial economy—vocational agriculture—and that the postsecondary program that best meets the needs is that which can provide the broad-based technical skills needed to support technological change.

Alternative Means for Achieving Economic Objectives

Although vocational education is and always has been intended to achieve economic goals, just how it has been fashioned to achieve those ends most effectively and efficiently has changed. The means have varied with economic, social, and even political conditions. While unanimity over what constituted an exemplary program never existed, in any given period there have been broadly accepted input and output criteria and agreement on the models that best met those criteria. The fundamental strategies by which vocational education achieves its economic goals are:

(1) Providing the skills and knowledge needed to learn new jobs easily and to contribute to improvements in productivity, basic competencies and problem-solving ability;

(2) Improving the transition from school to work and on-the-job performance, occupation-specific skills and appropriate workplace behaviors;

(3) More efficiently employing underutilized human resources, equality of opportunity and access; and

(4) Supporting local economic development and growth, business-specific training and entrepreneurial skills.

Perceptions of what constitutes exemplary vocational education are based on the relative emphasis given each strategy by the labor market needs as defined by employers and by national objectives as defined by society.

The first strategy is based on the assumption that employers conduct their own on-the-job training, that modern technology-based work requires strong analytical abilities, and that employees should be adaptable and able to learn new tasks and/or jobs in a minimum of time. Furthermore, this strategy represents an alternative pedagogy for teaching in an applied setting, which is what many progressive educators had in mind when they first supported vocational education. Output measures of effectiveness include educational achievements, success in postsecondary education, employability, and flexibility; input measures are quality and experience of teaching staff, expenditures per pupil, and mix of academic and vocational course requirements.

The second strategy assumes that schools provide job-specific training and that on-the-job training will be minimized, that employees remain in a particular job for an extended period of time, and that academic requirements are set strictly by the requirements of the occupation toward which the education is directed. Examples of output measures of effectiveness are job placement and on-the-job performance, and input measures are adequacy and modernity of equipment and facilities, labor market experience of instructors, and number of programs and their relation to occupational projections.

The third strategy presumes that employers will hire those easiest to train and requiring the least assistance, but that those most difficult to train represent underutilized resources. Government-supported programs, with equal opportunity guaranteed in the Constitution, ought to improve economic opportunities for those who are disadvantaged. Output measures of effectiveness include enrollments of special populations in programs and subsequent employment, and input measures include expenditures on extraordinary services and equipment that might be required and effective counseling.

The last strategy assumes that vocational education, if properly designed and used, can influence the local business climate and stimulate local growth. Measures of effectiveness, such as degree of coordination with local planners and number of business start-ups or expansions supported, are based on contributions to the state and local economies rather than on individual outcomes.

Vocational education uses a mixture of strategies—or means—but the relative weights assigned to each influence the delivery system and program design. Some are complementary, with a synergistic effect on outcomes, but others are independent or even contradictory. For example, vocational programs to increase basic skills also serve to spur economic development. But customized training, in which the client can dictate program entry and even use the program as a screening device, is in conflict with equity aims and bears little relationship to basic skills.

Figure 1 traces changes in priorities over time, which in turn have determined what programs have been considered exemplary models to be emulated and to drive policies. The figure, based on this writer's review and interpretation of historical documents and records of congressional debates and testimony, is a rough estimate presented to illustrate the relationship between macro-shifts in priorities and economic and social conditions. The ordinal scale reflects, in part, balances between agricultural and industrial programs, which often have had different aims, and between programs for adults and for youth.

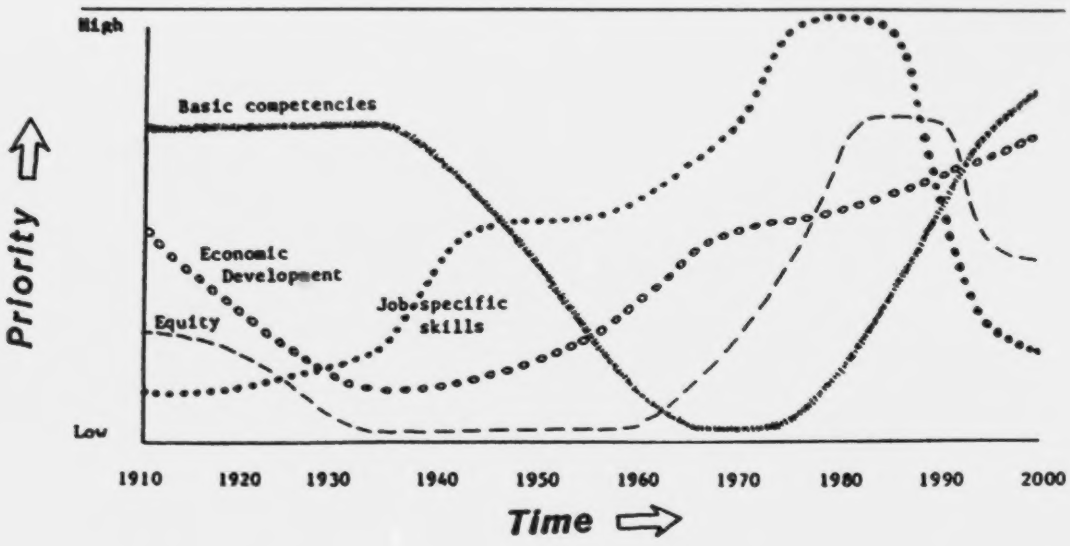
An Historically Driven Rationale

The Period from 1910 to 1930: Legitimacy and National Goals

Vocational education was conceived under conditions not too unlike today's: a structural shift in the nation's economy (then from agriculture to manufacturing) and a growing threat of foreign competition. The burgeoning urban-industrial labor markets were filling up with immigrants from Europe and in-migrants from rural America. Public education was still in its infancy, and many states did not yet have compulsory education laws. The average years of schooling were quite low, and most workers lacked both the basic literacy to facilitate on-the-job training and the work habits associated with mass production. The possibility of idle masses of unemployed workers that these conditions posed was both inefficient and alarming to business leaders.

Figure 1

Determinants of Excellence in Vocational Education
1910 - 2000



Public schools were not the only path to learning during this period. In the agricultural and rural sectors of the economy, youth also learned job skills and work habits from their parents and neighbors. But in the industrial and urban sectors, where the workplace was separate from the home, that home-based education was unlikely to take place. The few agricultural and industrial high schools that preceded federal legislation reached only a small minority of all youth, and the policymakers realized they needed to provide a larger number of the new and potential labor market entrants with what they needed to adapt to an unfamiliar workplace. In fact, they expected vocational education to accomplish much more.

Discussions that occurred in Congress between 1906 and 1917 reveal a whole host of expectations, ranging from protecting capitalism to increasing industrial efficiency:

- "Increasing the (industrial) efficiency of the rising generation" (1912);
- "Turning them (youth) from vicious paths into self-respecting, self-supporting, contented producers" (1912);
- "Diminishing poverty and crime" (1913);

- Guaranteeing "an equal chance in life with every other child" (1913);
- "Mak[ing] them more self-respecting, more law-abiding, more patriotic, and better prepared to take their places in the great struggle for commercial supremacy upon which we are entering" (1916);
- "Curbing the growth of socialism and anarchy in this country" (1916);
- "Keep[ing] the youth in school a longer period and so increas[ing] their store of knowledge" (1916).

Less widely publicized, another policy was being formulated simultaneously to meet the vocational education needs of rural youth who were not moving to the cities, and that policy was designed to achieve a very different set of objectives. Rural vocational education, which was almost exclusively agricultural and drew its support from agrarian organizations such as the Farmers Union and Grange as well as from agribusiness, had its own agenda. Supporters wanted to slow the outmigration of ambitious and industrious youth, which was depleting rural economies of their most valued human resources, by strengthening public schools and making the curriculum more relevant to rural work life, and they wanted to improve productivity by introducing scientific farming and management principles.

In a nutshell, industrial education was intended to help youth adapt to the technology and manipulate the equipment of the manufacturing workplace, which was designed and introduced by professionals and specialists. Agricultural education was to help youth evaluate, adopt, and use the new technologies being developed by the colleges and agricultural extension stations. These contrasting aims led to very different paradigms of vocational education and criteria for exemplary vocational education programs.

Although there was general agreement over the design of vocational agriculture, no such agreement existed over the best trade and industrial education. The majority of the leaders from business and industry clearly wanted a program to fashion an industrial work force and meet industry's needs. The lobby for federal aid to vocational education was spearheaded by the National Association for the Promotion of Industrial Education, a coalition of industrial leaders.

Labor expected vocational education to provide an avenue to supervisory and management positions heretofore inaccessible to many workers, an early form of equity. Samuel Gompers, president of the AFL, called for a program that would turn out youth "capable of acting as foremen, superintendents, or managers—men possessing the comprehensive insight, interest, and skill necessary for the organization and direction of a department or shop" (Lazerson & Grubb, 1974). In 1909, the AFL conventions defined the ideal vocational curriculum: "The course of instruction in such a school should be English, mathematics, physics, chemistry, elementary mechanics, and drawing, the shop instruction for particular trades, and for each trade represented, the drawing, mathematics, mechanical, physical, and biological sciences applicable..." (AFL-CIO testimony before the Elementary, Secondary and Vocational Subcommmittee of the House Education and Labor Committee, May 18, 1983). Despite the intent to open new opportunities to immigrants and working class youth, the policy had perverse and probably unanticipated results. The two-track system that resulted served to sustain a dual labor force and eventually prevented working class youth from advancing into management and supervisory positions.

Progressive educators, backed by a smaller number of business leaders, believed that vocational education, by allowing students to apply knowledge to practical situations, would improve the educational process and expand economic opportunities. Their leading spokesman, John Dewey, was one of the few to foresee the potential harm and inefficiency caused by a two-track system that separated vocational and academic education. He wrote, "Nothing could be more absurd than to try to educate individuals with an eye only to one line of activity." He also saw technology in a different light. "As a consequence [of new technology] industrial occupations have infinitely greater intellectual content and infinitely larger cultural possibilities than they used to possess. The demand for such education as will acquaint workers with the scientific and social bases and bearings of their pursuits becomes imperative, since those who are without it inevitably sink to the role of appendages to the machines they operate" (Dewey, 1916).

A few enlightened business leaders recognized the value of better-educated employees. The president of AT&T, addressing the National Society for the Promotion of Industrial Education in 1907, remarked that the vocational education graduate should understand not just how to operate a machine, but "the theory of its operation and the qualities and characteristics of the material upon which he is working," implying a high level of basic competencies (Fish, 1917).

What all proponents held in common was that they expected vocational education to extend public education for many young people and to improve basic skills. Occupational education was in essence a utilitarian approach to education, a way to teach basic skills in an applied, practical environment. Supplemented by shop courses to provide manual skills and work habits, this comprised vocational education; in the early years it was not business or industry specific.

The Period Between 1930 and 1960: Institutionalization and Stability

In the following decades, which extended through depression, war and "police actions," and up to about mid-century (1930-1960), vocational education became institutionalized. It continued, with only minor adjustments, to serve as an alternative high school educational program but increasingly for students from the lower social classes and with lower achievement scores. Vocational education provided work skills by keeping youth in school longer, transmitting basic skills, and instilling the values of the industrial workplace. Even though the economy of the 1930s was depressed, few expected vocational education to create new jobs and solve the nation's economic woes.

In rural areas, vocational agriculture remained preparation not just for a job but to own and operate a private enterprise, to become an entrepreneur in the local economy, and to preserve a threatened way of life. Employment was not the main measure of effectiveness; graduation, employability, and economic success were. Vocational education teachers were teachers first and vocationalists second.

Equality and industrial development were not strong influences on vocational education policy during this period. Exemplary programs were those most effective at producing well-informed and productive graduates, but with a trend toward fewer academic courses, more shop courses, and consequently a more distinctive two-track system. In the 1940s, a major change in focus began to take place. The economy shifted into wartime production, which demanded that a largely new and temporary work force be trained quickly. Therefore, there was less incentive for business to invest in training, and the definition of exemplary began its shift toward more job-specific training.

The Period from 1960 to the Present: Specialization and Separatism

After mid-century, economic changes accelerated. The changes included increasing competition among states for industrial growth, rising levels of educational attainment spurred by the GI Bill with concomitant increased importance of credentials as tickets to the good jobs, and growth in agricultural productivity leading to rapid decline of farm employment. With the civil rights movement underway, more responsibility was placed on the schools for equalizing opportunities. Further, economists predicted that new manufacturing technologies would generate massive job displacements and warned of imminent structural unemployment. A brand new set of expectations for vocational education emerged, and new perceptions of what means would best meet the needs of the economy solidified among policymakers.

Educators and business leaders were convinced that vocational education as it then existed, dominated by vocational agriculture and trade and industrial programs in high schools, was incapable of meeting the needs of a modern industrial economy. President Kennedy convened a Panel of Consultants to examine vocational education and recommend changes. It recommended a wider range of occupational programs and more specialized centers. But it also recommended:

> Basic vocational education programs should be designed to provide education in skills and concepts common to clusters of closely related occupations. The curriculum should be derived from analyses of the common features of the occupations included. These students should receive specialized training later in post-high school programs, apprenticeship, or on-the-job experiences (Panel of Consultants, 1963).

The Panel's final report led to the most significant shifts in vocational education in this country. Heeding some of the recommendations and ignoring others, Congress enacted the Vocational Education Act of 1963, which explicitly reorganized programs to meet the precise labor market needs of employers and expanded the population to be served to include adults and those who are disadvantaged or handicapped. Funds were to flow to states through block grants and were expected to be allocated according to occupational projections. Programs were to be planned in coordination with state and local economic development agencies and advisory boards. The intent was for schools to provide a wide array of occupational programs with enrollments corresponding to occupational projections. A large part of the new federal funds was to be used to build area vocational centers so that rural youth could have more nonagricultural opportunities. Expanded postsecondary programs were recommended for more technically oriented occupations.

The new law set vocational education further apart from the nonvocational component of public schools, even removing it physically in many instances, which further isolated its teachers and administrators from nonvocational teachers and administrators. Exemplary, under the new law, was the program that best met local labor market needs, as measured by placement and employer satisfaction and, particularly in the South, how effective it was as a recruiting tool.

Criteria used to compare programs often were quantitative rather than qualitative. More was considered better and most, exemplary. Large numbers of different occupational programs, large sums of money invested in new equipment, and large numbers of total students and disadvantaged youth enrolled were the criteria of excellence. Adding equity considerations in the distribution of funds did little to alter the purposes of immediate employment and job-specific training. In the early 1980s, the Council of Chief State School Officers

(CCSSO) issued a statement on objectives for vocational education that still reflects this period's priorities. Recommended objectives included to equip individuals with marketable skills and employability skills, to foster full employment by providing a trained work force, and to supply a trained work force that will attract and promote economic and industrial development. Goals such as decision making, mastering basic literacy, and developing organizational leadership were mentioned, but relegated to "secondary purposes" (CCSSO, 1982).

Throughout this revolution in vocational education policy, which was implicitly intended to squeeze out vocational agriculture and expand what policymakers considered more "technical" programs, vocational agriculture remained much as it had been. The result, however, was that in rural areas vocational agriculture retained the support of the school and community. Despite attempts to compartmentalize agriculture into narrow components, it resisted increasing specialization, although it did alter its outcome measures to reflect the new law. And, when automation and technological advance failed to materialize as predicted, a large share of the technical programs were honed into customized, company-specific training and short-term retraining, with little attention to the goals of flexibility or adaptability.

Vocational Education Today for Tomorrow's Economy

Each day it becomes more evident that the changing structure of the economy has reached a new plateau. The use of new technologies on the production line and in the office and influences on the workplace and markets are so pervasive that one can argue that the nation has a qualitatively different occupational structure than it did even a decade earlier. And the trends are unlikely to subside. Richard Cyert, president of Carnegie Mellon University, predicts that in order for U.S. manufacturing to remain competitive, it will have to automate until the share of the total work force in manufacturing drops from the current 21 percent to about 10 percent. This, he believes, will happen by about the year 2000 (Cyert, 1985).

It was economic change that underscored the urgency of recent measures to reform public education to improve the skills of the work force. Employers began to realize that employees, though quite proficient in what they had been doing, were not well-equipped to be retrained for new work or different jobs. The reason most often cited was lack of basic competencies, and public education was identified as the culprit.

Two decades earlier such an event might have motivated a surge of support for vocational education. But not this time. It was not job-specific skills that were lacking; it was the inability to adapt quickly to new situations, to take on added responsibilities, and to learn new tasks and behaviors to match technological and organizational change. Thus, the private sector turned to the core high school curriculum to improve its supply of human resources and to the two-year postsecondary schools for more technical skill needs.

Nearly every time that business people met with educators to critique education and declare what they wanted and needed in new employees, the sets of attributes were quite similar. In 1983, a House subcommittee was told by a stream of experts that work force training should be basic, not employer-specific (Employment and Training Reporter, 1983). The president of the National Association of State Boards of Education (NASBE) told the subcommittee: "Students trained in vocational education should have equivalent training in basic academic skills as those enrolled in an academic program." She continued, quoting the U. S. Chamber of Commerce: "The employee who will succeed in tomorrow's rapidly changing work environment will require strong *basic* and occupational education. . ." (Goldsmith, 1983)

The National Commission on Employment Policy forecast the trend in priorities in its 1979 Annual Report: "An individual who has not mastered the three Rs and life-coping skills is shut out of a large and growing share of the jobs offered in a modern, technologically sophisticated and paper-oriented society." The Committee for Economic Development, in its report *Investing in Our Children*, hedges somewhat, stating "vocational education majors should be expected to complete a core curriculum in addition to occupational specific training" (Committee for Economic Development, 1985). The Southern Regional Education Board (SREB) presented a set of recommendations for secondary vocational education based on "a commitment to strengthen the role of vocational education to ensure that all secondary school students are encouraged, and expected, to develop academic skills, which should be the fundamental goal of all high schools. The Commission believes that the suggested actions will reinforce the contribution of vocational education in meeting modern social and economic needs" (SREB, 1985).

Just what are the "basic competencies" that so many educators and employers want to become part of the vocational education curriculum? The 1983 National Academy of Sciences study, *High School and the Changing Workplace: The Employers' View*, may have stated them most succinctly. They listed the core competencies as command of the English language; reasoning and problem-solving; reading; writing; computation; science and technology; oral communication; interpersonal relationships; social and economic studies; and personal work habits and attitudes (National Academy of Sciences, 1984).

An argument one still hears for not making major change in the curriculum, though with less frequency, is that new work will require fewer skills, and that job-related skills and good work attitudes will better serve the majority of youth. There are heated debates over whether the application of new technologies to jobs will result in a need for fewer or more skills and knowledge. Much depends on how technology is implemented and what types of organizational changes accompany it, but the weight of evidence and opinion now seems to be that greater skills and knowledge will be needed. Larry Hirschhorn, in Beyond Mechanization, argues persuasively that "we would then see the worker moving from being the controlled element in the production process to operating the controls to controlling the controls" (Hirschhorn, 1986).

Even when the intent of technological advances was to simplify work, the results were often contrary to expectations. As David Noble concluded in his extensive study of the development of numerically controlled (N/C) machine tools:

> Management learned the hard way, from the trials of experience, that with N/C they had invariably to depend upon the work force as much or even more than they did before. Optimal utilization of the expensive new equipment was now the key to economical, quality production, and the skills and cooperation of the workers were the key to optimal utilization (Noble, 1984).

But the arguments really are irrelevant and ought not to affect educational goals. Those entering jobs that may require fewer skills still deserve an education that will allow them to advance beyond low-paying jobs as quickly as possible, so that they are not condemned to remain in low-paying jobs as so many functionally illiterate persons are today. Those entering jobs that may require higher-order skills will probably need more than 12 years of education, but they will need the basic competencies as prerequisites for postsecondary education programs.

Even with the broad-based acceptance of new roles and goals for vocational education, corresponding changes in what is an excellent program have been slow to occur. Prevailing opinion is still that the best vocational education programs are delivered through specialized high schools. Fortune magazine, in 1983, featured New York City's Aviation High as an exemplary school, representing the technical institute. It is undeniably an outstanding school (Sewall, 1983). Many of the studies of the quality of vocational education base their findings on such exemplary schools, which are often urban magnet schools and are practical alternatives for only a handful of large cities, and conclude that these are models. What has not been adequately evaluated is how a typical area vocational school compares to vocational education in a typical comprehensive high school, or even how the best of both categories compare.

This return to the original goals of vocational education means new ways are needed to determine what constitutes an exemplary program (or system of vocational education) and implies different criteria for both secondary and postsecondary vocational education.

Basic skills and problem-solving ability undoubtedly are going to have a higher priority, and job-specific skills will have a lower priority in the future. Economic development will continue to be an additional measure of exemplary programs, but operating in a different mode. Rather than supplementing business recruiting, which is in decline as a state economic development policy, vocational education will be expected to contribute to a comprehensive educational infrastructure, providing strong basic competencies at the secondary level and more specific occupational skills at the postsecondary level. Equity, despite the retention of set-asides in the new law, will not receive the same priority. This is true in part because of the assumption—not true—that the goals set in the 1970s have been met and equal access exists and in part because the balance of priorities seems to have shifted toward choosing efficiency over equality whenever a conflict exists.

There is some doubt whether vocational education will be able to respond within its present organizational structure and with its current delivery system. The move toward specialization, supported heavily by federal dollars from the Vocational Education Act, the Economic Development Administration, and the Appalachian Regional Commission, has resulted in heavy investments in equipment and facilities separate from the high school. And those states that administer vocational education from separate boards may have more trouble reconnecting programs to the high schools and strengthening basic competencies.

States have made a large investment in vocational education systems that meet the needs of past legislation and a disappearing economy. Florida and South Carolina, for example, have enacted new legislation tying allocations to placements. To date there is little evidence that state vocational education programs are utilizing the options available in the Carl Perkins Vocational Education Act to judge whether a program is exemplary according to new criteria.

Vocational Education's Performance on Basic and Technological Competencies

One reason that employers are turning their attention to the public high schools to improve human resources and not specifically to vocational education is their experience that vocational education students have not been successful enough in acquiring basic competencies, such as computation, reasoning, communications, and science. In order to be considered a vocational education student, one must enroll in a sequence of courses leading toward a specific occupation. On average, each vocational education student takes five units of vocational courses. Assuming most of these are in the final two years, vocational education courses consume half of the student's junior and senior year class time. Further, vocational education students are drawn disproportionately from the lower end of the academic achievement scale and often enter the programs with academic deficiencies, so that they need more time or emphasis on basic skills, not less.

The High School and Beyond study of high school seniors in 1982 reveals the exposure vocational education students had to basic subjects. Although students may be acquiring basic knowledge in their vocational courses, there is little evidence to demonstrate that this is, in fact, happening.

Table 1

Percentages of 1980 Sophomores Graduating in 1982
Who Took Selected Academic Courses
(By track)

Course	Academic	General	Vocational
Chemistry I	45.9	13.3	6.3
Physics I	24.1	3.7	1.9
Basic Biology	83.1	71.7	65.0
Zoology	6.0	4.1	3.3
Algebra I	73.3	59.4	52.9
Algebra II	52.0	20.3	13.2
Geometry	74.8	35.7	24.3
Trigonometry	15.3	2.9	1.5

Source: National Center for Education Statistics, Bulletin, "Science and Mathematics Education in American High Schools: Results from the High School and Beyond Study." Washington, DC: U.S. Department of Education, May 1984.

To be fair, it should be noted that despite the multitude of testimonials as to the importance of basic skills, the study undertaken for the past congressionally mandated study, completed in 1981, found little statistical evidence of any relationship between test scores on basic skills and employment outcomes (Haney & Woods, 1982). The data used, however, were quite weak. The period studied was the earlier, more industrialized period; it did not distinguish between occupational programs where basic skills were apt to be important and those where they clearly were not. Furthermore, the comparisons were mostly between students in the general and vocational tracks. Many of the studies of education and economic success do show that levels of educational attainment (added years of education) influence outcomes and that achievement is related to attainment. Moreover, the claim being made for basic skills is that a minimum level is needed, not that high levels of proficiency make a major difference. The issue is whether a student has taken and passed geometry, not whether he or she received an "A" or a "C."

In theory, basic competencies can be learned effectively within the applied framework of vocational education. As former Secretary of Labor Ray Marshall recently told a Southern Growth Policies Board meeting, "If taught right, technical education always required considerable 'academic' content—and this will be even more so in the future, as workers will have to have higher theoretical and conceptual skills" (Marshall, 1986). Some teachers take that charge seriously. But vocational education has turned more and more to specialists without experience or grounding in methodology in order to demonstrate that it is keeping up with technological changes. It has traded improved teaching of basics through vocational education courses for better preparation for specific job requirements.

Willis Hawley, Dean of the Peabody School of Education at Vanderbilt, recently told an audience of vocational educators that "the success of the vocational education system will inevitably depend on the effectiveness of the cadre of professional teachers who will give the system stability and whose expertise and status must be at least as great as the expertise and status of the teachers of so-called academic subjects" (Hawley, 1986).

Greater emphasis in vocational education on basic competencies and broader occupational skills could be viewed as a relief for administrators. It removes a large part of the burden on vocational education to continually justify its existence on the basis of immediate labor market outcomes and to try to maintain expensive plants and equipment. As long as business is willing to accept responsibility for job-specific training, high school students can concentrate on a narrower set of objectives applicable to a wider range of educational opportunities.

There are occupations, however—especially in technical fields—that require specialized and more advanced preparation. Students who are able to acquire sufficient basic competencies and complete the prerequisites for these before high school completion can enroll in postsecondary institutions with advanced educational programs.

Exemplary Vocational Education: Two Cases in Point

Vocational Agriculture: Entrepreneurship and Future Business Leaders

Vocational education badly needs new models, new visions of how it can adapt to the new economy. One such model may be found in an unlikely place—vocational agriculture. Among vocational educators, agricultural educators have been the most reluctant to adapt their programs to the industrial workplace. As a result, because they have remained attuned to a more entrepreneurial economy and basic education, vocational agriculture may be the program best prepared to provide the technical skills, problem-solving ability, and leadership needed by the economy.

The history and objectives of vocational agriculture, which are linked to scientific farming and management and to entrepreneurship, are uniquely suited to the new technology-based economy. They reflect the different philosophy that vocational agriculture has held from the start and the more academic orientation of vocational agriculture teachers.

Some vocational agriculture programs have given in to pressures to specialize and have broken down their programs into components such as agricultural mechanics and agricultural services and supplies. But most have resisted, keeping the original integrity of the program relatively intact. These are the programs that, when good, are very good and perhaps the best that vocational education has to offer.

A National Academy of Sciences committee convened last year to study agricultural education in secondary schools is examining the program's early traditions to expand its purposes. In addition to training for immediate employment, vocational agriculture increasingly can prepare students for higher education and provide an effective way to teach both applied sciences and core competencies. This expansion of purpose will explicitly shift the emphasis from placement to educational achievement.

A position paper from the American Association of Teacher Educators in Agriculture expressed the unique strengths of vocational agriculture succinctly, listing among four goals of vocational agriculture "to allow students to apply and further develop basic academic skills (math, science, etc.)" and "to provide high school students with an opportunity to study agriculture as a science. . ." (National Academy of Science, 1985).

The features of the program most important to the nation's economy are (1) its use of agriculture as a medium for teaching science and technology; (2) the range of subjects covered, which are applicable to many occupations; and (3) its location in the comprehensive high school.

The view of vocational agriculture as a laboratory for applied science rather than just a place to learn job skills is an important distinction. Vocational agriculture has been perhaps the most effective and underrated science program in the schools. Agriculture is itself a science, which includes soil science, land judging, artificial insemination, and water resources. There is a great deal of experimentation in vocational agriculture, when it is taught right; and teaching through inquiry is quite different from learning proper procedures, the more common vocational approach. In California, the Hart-Hughes Education Reform Act of 1983 cross-references vocational agriculture courses as substitute core requirements in science.

The second unique feature of vocational agriculture is the extensiveness of the curriculum. Even though most students are not being prepared for production farming, the fact that the enterprise is entrepreneurial, with high investments and high risks, influences the program design. All students learn business management and finance skills. A decade ago agriculture teachers were ridiculed for their unwillingness to establish high degrees of specialization within their field—despite the fact that labor market outcomes of vocational agriculture graduates were comparable to other programs. Today, those other programs are reversing direction and grouping occupational programs into less specialized clusters, similar to vocational agriculture.

The third feature is that it has remained in the comprehensive high school in order to minimize the distinctions between the academic and vocational curricula. While costing the program resources in those states that have given priority to area vocational centers, it has resulted in a program better able to integrate the two curricula.

There are other features that set vocational agriculture apart, not the least of which are the leadership training provided through Future Farmers of America (FFA) and the relationship of programs to local communities, which also are important features but are beyond the scope of this section. While exemplary, these strengths are based on their history and tradition and would be very difficult to emulate.

Much of the evidence of the effectiveness of vocational agriculture is necessarily anecdotal and impressionistic—the number of current political and business leaders who are former vocational agriculture students. One state-level study of schools in middle Tennessee did conclude that high school seniors who participated in FFA had superior leadership and personnel development abilities to those of students who were not enrolled in vocational agriculture (Ricketts & Newcombe, 1983).

One of the major limitations of vocational agriculture is that it has been primarily a rural model and has not been able to influence urban education at all. There are, however, a couple of notable exceptions—in Philadelphia and Chicago. In Philadelphia, the Walter Biddle Saul High School of Agricultural Sciences (WBSHS) was established in 1943. Its basic philosophy statement says "we believe that the courses in vocational agriculture provide a sound foundation and that our program of academic studies prepares the student to meet college entrance requirements."

The other school, the Chicago High School of Agriculture, started only last year. It, too, is vocational although its graduates must take four years of English, three years of mathematics, three years of laboratory science, three years of social science, and two years of foreign language and culture. Students must represent all academic quartiles of their classes so that those in the lowest quartile who meet the other criteria have an opportunity for admission equal to those in the highest quartile.

Both schools have large minority enrollments, in itself unusual in vocational agriculture. The Philadelphia school is 41 percent minority and the Chicago school is 85 percent minority. Both are about half female. Both also have unusually high attendance records--more than 95 percent—which is even more unusual considering they are not neighborhood schools and most students commute long distances. Last year, about two-thirds of the Philadelphia graduates went on to higher education.

While vocational agriculture provides a structural model for high school vocational education, there are nonagricultural programs that take on some of the best characteristics of vocational agriculture. For example, a clustered approach called "Technical Principles"[1] provides the kind of broad-based preparation in the high school that the best vocational agriculture programs do. Much of what vocational agriculture does can be and is replicated in other occupational areas.

Two-year Technical Institutes: The Renaissance Technician

The two-year postsecondary institutions, originally intended as a transition between high school and the university, came into their own when they turned their attention to vocational education in the 1960s. The Panel of Consultants assembled by President Kennedy concluded, among other things, that:

> Because of advancing technology, many jobs require more technical proficiency and greater knowledge of mathematics and science. These jobs also often require more mature persons than youth of high school age. As a result, attention is increasingly focused on postsecondary vocational

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[1] An example is the Principles of Technology curriculum developed by the Center for Occupational Research and Development. The curriculum is designed for secondary and postsecondary articulation and places strong emphasis on science, technical reading and writing, and mathematics. The curriculum strikes a balance between the theoretical orientation of college preparatory curricula and the occupationally specific focus of most standard vocational education programs.

> and technical education (Panel of Consultants, 1963).

Despite the ambitious goal of making vocational education more technically oriented, most of the two-year schools in the nation seized the opportunity to compete with high schools and offer similar programs. As late as 1980, the large majority of those enrolled in postsecondary vocational education were in nontechnical fields. The schools that took the Panel's charge seriously are the schools that have become exemplary.

Today there is even more reason to provide preparation for occupations requiring technical skills because they are the fastest growing and provide the highest pay. Although there are critics who claim the number of technical jobs is overstated (Grubb, 1984), the fact remains that even nontechnical occupations are becoming more technical in nature.

The vision of excellence in postsecondary vocational education is the two-year technical institute that provides the skills needed to qualify for technical positions. And, since technology implies change, the outstanding programs are able to provide the flexibility graduates will need to adapt and react to, and participate in, technological change. These institutions are producing the modern equivalent of the Renaissance Man—or Woman—who has the ability to understand how the entire production and business systems fit together, can tackle complex technical, systematic, and interpersonal problems, can contribute to more effective use of new technology, and is able to adapt to change (Rosenfeld, 1986).

The southern states have a large number of such institutions. One is the Piedmont Technical College in Greenville, South Carolina, which has one of the nation's most modern Robotics Resources Centers. Despite the technologies and the specialization associated with expertise, the curriculum concentrates heavily on basic skills and problem-solving abilities. The program bases its philosophy on the supposition that "problem-solving is the most important skill required for successful operation of the future factor. . . A strong base in communications, problem-solving, basic technical and automation principles, and team problem-solving must be part of the educational process" (Rehg, 1986). The program's director warned the American Vocational Association back in 1982 that it was too narrow in its perspective and that "vocational schools can no longer afford to train students for careers in a single field. . . Individuals will have to be trained to handle interdisciplinary chores. . ." (Foster, 1982).

The school has close ties to the labor market area, and it epitomizes the use of vocational education for economic development. In fact, the site for the Robotics Resource Center was selected in large part because of the location nearby of Cincinnati-Milacron, one of the largest robotics manufacturers, and because of some new robotics installations in local industries. Furthermore, technical schools in South Carolina have unique cooperative arrangements that allow them to use their specialized resources most efficiently. The college expands its outreach across the state by sharing staff and programs with other technical institutes. Similarly, six technical institutes in the state have developed different areas of technical expertise. The Tri-County Technical College has an outstanding Microelectronics Resource Center, which they share with other schools, and the Greenville Technical Institute has an Advanced Machine Tool Technology Center.

Other two-year schools offer similar technically oriented programs combined with more advanced "basic" skills and tight links to communities. The Center for Productivity, Innovation, and Technology at Chattanooga State Technical Community College represents a $3.3 million investment by the state in training for new manufacturing technologies. According to its director, the most frequently requested abilities for graduates are not technical skills, but public speaking and report writing, both of which are important elements of the school's curricula. Another model in a different occupational area is the Advanced Technology and Health Science Center of the Williamsport Area Community College in Pennsylvania. It points out the common error of considering only those programs under the vocational education rubric of "Technical Occupations" as truly technical. The school offers programs for technical occupations within health, agriculture, and business. This particular school, rather than duplicating programs offered in nearby high schools, allows high school juniors and seniors to enroll if they have demonstrated that they have mastered the basic skills. Like the other exemplary schools, the program emphasizes "adaptability, the ability to solve problems, analytical thinking, an understanding of the concepts and uses of technology, strong communication and computation skills, and an acceptance of learning as a lifelong process. . ." (Brender, Rice & Thompson, 1985).

What each of these programs holds in common is a recognition of the value of communications and writing skills as well as scientific fundamentals. All realize that technology is constantly changing, and that the narrowly skilled technician is of less value in the long term than the Renaissance technician who is able to adapt. Each program was developed in response to local economic needs and is part of an explicit development strategy. The major weakness of the programs may be in the equity dimension. Many of the more technical programs are stereotyped as for white males, not as accessible to special populations, and most students—at least the last time data were available—were male.

Research Issues and Questions

(1) The skills and knowledge that seem to be desired by employers today are somewhat different from those employers wanted in the past. Many attributes, such as problem-solving skills and adaptability, are difficult to measure. There is a need to better understand and define the characteristics that employers want, in terms that can be translated into educational processes and curricula, so that vocational education can both be more effective and measure its effectiveness.

(2) Under the new federal legislation, states have options for evaluating vocational education besides labor market outcomes, which have been used exclusively in the past. Further, states are asked to assess quality of programs along a number of dimensions including adaptability and technological relevance. Which of the criteria suggested in the Act are being used and what measures have states chosen to use?

(3) Where and how are basic skills being formally integrated into the vocational education curricula and under what conditions? For example, is it more likely to occur in specific institutional settings, with certain kinds of teachers, or in certain states? In particular, more information on the preparation of vocational education teachers is needed, to find out what kind of training will lead to effective integration of basic compentencies in the occupational curricula. If teachers are recruited from industry, what preparation is required to make them effective?

(4) Research on access to the exemplary schools would show whether underserved populations are enrolling in sufficient numbers in the technical programs that generally lead to the greatest opportunities.

(5) Little research has been done, outside the customized training programs, on the roles of vocational education programs and institutions in local and state economic development. Most of the evidence rests upon testimonials of businesses served or local development officials, and is not without bias. This offers fertile ground for research, particularly if economic development is to continue to be a primary objective of vocational education.

(6) This paper sets out one possible set of goals for vocational education. To determine what an exemplary program is, it will be necessary to refine and adjust the goals and assign weights based on state and local needs and values. It may be possible to use the numerous recent state-level studies and policies, which often include discussions of objectives, to discover which goals are identified and how they are valued.

References

American Association of Teacher Educators in Agriculture. (1985, December 9). Position paper submitted as testimony to the Board on Agriculture, National Academy of Sciences. Atlanta, GA.

American Federation of Labor and Congress of Industrial Organizations. (1983, May 18). Statement to the Subcommittee on Elementary, Secondary, and Vocational Education, Committee on Education and Labor, U.S. House of Representatives.

Bender, R. L., Rice, J. P., & Thompson, J. F. (1985, October-November). The advanced technology and health sciences center. AACJC Journal.

Commission for Educational Quality. (1985). Ten recommendations for improving secondary vocational education. Atlanta: Southern Regional Education Board.

Committee for Economic Development. (1985). Investing in our children. Washington, DC: Committee for Economic Development.

Council of Chief State School Officers. (1982). Statement before the Council of Chief State School Officers.

Cyert, R. M. (1985, Summer). The plight of manufacturing. Issues in Science and Technology, 1.

Dewey, J. (1916). Democracy and education. New York, NY: Macmillan.

Employment and Training Reporter. (1983, June 22).

Fish, F. P. (1917, January). Address. Proceedings of the organizational meetings of the National Society for the Promotion of Industrial Education, 1. New York: Columbia University, Teachers College.

Foster, S. G. (1982, December 15). Vocational education is too narrow, experts say. Education Week, 6.

Goldsmith, J. (1983). Statement of the National Association of State Boards of Education to the Subcommittee on Elementary, Secondary and Vocational Education, Committee on Education and Labor, U.S. House of Representatives.

Grubb, W. N. (1984, November). The bandwagon once more: Vocational preparation for high-tech occupations. Harvard Education Review, 54.

Haney, W., & Woods, E. M. (1982, May). Secondary vocational education, basic skills, and employment. Cambridge, MA: Huron Institute.

Hawley, W. D. (1986). The education of high school vocational educators. In S. A. Rosenfeld (Ed.), Technology, the economy, and vocational education. Research Triangle Park, NC: Southern Growth Policies Board.

Hirschhorn, L. (1986). Beyond mechanization. Cambridge, MA: MIT Press.

Lazerson, M., and Grubb, W. N. (Eds.). (1974). American education and vocationalism: documentary history 1870-1970. New York: Columbia University, Teachers College.

Marshall, R. (1986). New skills for the changing economy. In S. A. Rosenfeld (Ed.), Technology, the economy, and vocational education. Research Triangle Park, NC: Southern Growth Policies Board.

National Academy of Sciences. (1984). High school and the changing workplace: The employers' view. Washington, DC: National Academy Press.

Noble, D. (1984). Forces of production: A social history of industrial automation. New York: Alfred E. Knopf.

Panel of Consultants on Vocational Education. (1963). Education for a changing world of work. Washington, DC: U.S. Government Printing Office.

Rehg, J. (1986, May). Automation training tools of the future. T.H.E. Journal, 81.

Ricketts, S. C., & Newcombe, L. H. (1983). Leadership and personal development abilities possessed by high school seniors who are FFA members in superior FFA chapters, non-superior FFA chapters, and by seniors who were never enrolled in vocational agriculture. Middle Tennessee State University, from doctoral dissertation at Ohio State University.

Rosenfeld, S. A. (1986, Fall). The education of the Renaissance technician: Postsecondary vocational-technical education in the south. Foresight, 4.

Sewell, G. (1983, September 19). Vocational education that works. Fortune.

COMMENTS ON
ACADEMIC SKILLS AND OCCUPATIONAL TRAINING

Ellen Summerfield, Principal
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I would like to congratulate the person who put the agenda together. Notice the word AND in the title for this session: Academic Skills and Occupational Training. In many cases, the two are considered an either/or proposition. I believe both types of education must occur in our secondary schools. I would like to begin my discussion by telling you about my school, and then within that context, I will respond to the paper presented by Stuart Rosenfield and John Bishop.

I am the principal of a new high school in Chicago, the Chicago High School for Agricultural Sciences. It is a magnet school located in the southwest corner of the city, which draws students from every neighborhood in Chicago. It is the smallest high school with the largest campus, located on a 72-acre farm owned by the Board of Education for over 100 years. The school opened last September with 120 freshmen. This year we have 240 freshmen and sophomores. Every student enrolled in the school takes courses in the agricultural sciences and every student is a member of the Future Farmers of America (FFA), a well-recognized student organization. We teach horticulture, food science, agribusiness, plant and animal science.

The Chicago High School for Agricultural Sciences came about due to community pressure. The school system wanted to sell the farm they purchased at 50 cents an acre, but local residents protested the sale of their historic "Last Farm in Chicago." The school board backed off and created a new high school. In 1983, central office staff brought professors from the University of Illinois and consultants from the state department of vocational education together on a monthly basis to design the curriculum. The debate began, and continues to rage.

The debate centers on academic versus vocational education. The Chicago High School for Agricultural Sciences has a college preparatory vocational program. We do both at our school—we require students to take all of the courses required for college admission and all of the agricultural science courses. Our students are required to take:

- Three years of mathematics;
- Three years of laboratory science;
- Four years of English;
- Three years of social studies;

- Two years of foreign language and culture; and
- One year of computer science.

In addition, students are exposed to the agricultural sciences in all four years.

When we recruit new students, parents ask, "This isn't a vocational program, is it?" I tell them that our program is college prep and includes hands-on experiences in agribusiness and agriscience.

There are those who say that a student must follow a track—college prep, regular, or vocational. We have proven that all students can succeed in a program that integrates academic and vocational subjects. Academic and occupational education can and should complement one another. The skeptics have arguments ready to prove us wrong:

(1) The first argument says there is no time in the school day to do both. A student must make a choice between academic and vocational courses. I say this is untrue. Without lengthening the school day, and without violating the teachers' union contract, we have fit in all of the courses. How did we do it? By shortening the lunch period to 30 minutes and eliminating study halls.

(2) The second argument says that if you require low-ability students to take academic (or college prep) courses, you will force them to drop out of school. Again, I say, not true. Over 500 students applied for admission to our school for the 120 freshman places last year. It was tempting to choose only the high-ability, college-bound youngsters. However, magnet schools have been accused of being elitist and skimming the talent and, as a result, causing the general high schools to become mediocre. I did not want to open our school the first year with charges of elitism. Also, I was curious to see what would happen if our students were representative of all ability levels.

Therefore, one-fifth of those we selected were talented, above national norms in reading and math, and college bound. One-fifth were below national norms, many with learning disabilities or limited proficiency in English. And the remaining three-fifths were average students willing to work hard.

Eighty-five percent of the students were minorities and 59 percent were female.

How did these students do after one year in the program? They did very well. Our attendance rate was the highest in

> the city at 94 percent. This is quite an accomplishment since many of these students travel an hour and a half on public transportation each way to school. More significant, our failure rate was lower than that of any of the other high schools in the city.
>
> The low-ability students did well—while few of them received A's in their courses, they managed to pass, despite the heavy course load they had as freshmen. Several parents came in to tell me that their children had never done so well in school. One mom is working to have the educable mentally retarded designation removed from her daughter's records because the child successfully completed algebra, computer science, English, and all the other courses required of freshmen.
>
> Did we lower our standards? Did we water down the courses? No. We raised our expectations and the students stretched and reached to meet them. All of the students were expected to succeed, whether they were in the top fifth, the average three-fifths, or in the lowest fifth of the class.
>
> We in education often use numbers in ways that hurt kids. We say that most students in high school will not go on to college, and of those who do go on, many will not complete the baccalaureate degree. This gives us an out—a reason to offer TRAINING rather than EDUCATION.
>
> Education opens doors, exposes students to possibilities—it should not limit a student. Kids who are victims of tracking systems are shortchanged. If students in a vocational track decide several years after high school graduation to pursue some type of postsecondary education, they find themselves lacking the courses needed for college admission.

The debate continues. There are those who insist we must decide to do one or the other:

- Have an academic curriculum that prepares students for college; or
- Have a vocational curriculum that prepares students for jobs.

I believe high schools should prepare students for college and for jobs. More importantly, high schools should prepare students for life. If a youngster never pursues any formal education beyond high school, isn't it that much more important for us to offer all we can?

People will need scientific understandings, math skills, knowledge of history and geography, language and culture, computer literacy, and communication skills in order to survive in the 21st century. Low-ability students are not harmed by taking academic courses. They are not damaged by too much math, science, or social studies.

As Stuart Rosenfeld argues in his paper, the measures of success for vocational programs need to change. Most of my students will go on to college. Is our school unsuccessful because we did not place students in entry-level jobs upon graduation from high school?

Stuart mentions vocational agriculture as a good model for reform in vocational education. I heartily agree. At my school agricultural science teachers are able to do all of the things the reform movement endorses. They do an excellent job of relating theory to practice.

Another myth must be dispelled. John Bishop refers to a study in his paper that found vocational students spending only 3 to 7 percent of their time applying basic skills to learning vocational skills. In agricultural science, this is not true. If you were to visit my school today, you would see three laboratories at the end of the hall—one is a biology lab, one is a horticultural science lab, and one is an agricultural and food science lab. You would not be able to identify the biology teachers from the ag science teachers. Both have lab activities, "hands-on" practice; both have lectures, assignments, and discussions of concepts. Students in ag courses and science courses learn the "how" as well as the "why." The problem-solving method is used in agriculture, as it is in the "pure" sciences.

Now, I would like to respond to several ideas in John Bishop's paper. First, John says on the first page, "Higher education is predominantly occupational education." If that is so, high school programs should not be judged on the basis of the number of students entering the labor market after high school graduation. We need to follow these students through postsecondary education, and then evaluate high school programs.

Later, John states, "Basic skills and occupational skills are complements rather than substitutes. Occupational skills and knowledge are essential because they directly affect productivity. Basic skills are important primarily because they contribute to the learning of job-specific and occupational skills."

The term "basic skills" gives me trouble. It connotes reading, writing, and arithmetic at the lowest level—enough to get by. In Chicago, we have a test called the Minimum Skills Proficiency Test, which high school students must pass in order to graduate. The test is used to determine whether students have minimum competencies or basic skills.

We in education need a new definition for basic skills. Students in the 21st century are going to need more than minimum competencies. They need a scientific base, knowledge of computers, critical thinking skills, and strong communication skills.

The second part of John's statement also bothers me--basic skills, he believes, should remain because they contribute to job specific and occupational skills, which in turn affect productivity. Vocational education can be justified by looking at how productive workers are as a result of their vocational training. John goes on to say that much of what we learn in high school is not retained if it isn't used. He suggests teaching students only what they can use. I hope the National Assessment will develop a broader definition of vocational education at the secondary school level than John Bishop's utilitarian and narrow view.

My school has a very strong Agribusiness Advisory Council, which has recommended a broader definition for secondary school education as preparation for work. The Council, under the leadership of the president of the Chicago Board of Trade, has established 10 subcommittees in areas such as animal science, horticulture, food science, ag technology, and ag communications. The subcommittees developed recommendations independently, but they all echoed the same concerns:

- Instruction at the secondary level should prepare students for further education. Entry-level jobs in agriscience and agribusiness are minimum wage, dead-end jobs. The exciting, well-paying careers require postsecondary education (two years beyond high school in certain areas of horticulture, at least a bachelor's degree in food science, and advanced degrees in other areas such as biotechnology and genetic engineering).

- Course content in ag science should avoid specialization (and yet we continue our march toward competency-based education).

- Students should develop good communication skills.

- Students should gain computer literacy, be able to compute, understand geography and economics, and learn about other cultures.

- Students should leave high school with good work habits, a sense of responsibility, and a strong work ethic.

- Students should be able to reason, solve problems, and adapt to changes.

Yesterday we listened to speakers who talked about vocational education in terms of: rates of return, return on investment, payoff to employers, input and output. These terms suggest an economic model, a production model, a utilitarian approach. In my opinion, these terms limit those of us in the high schools. We are not developing workers; we are educating people who happen to work. A productive work force is critical to our economy, but there are other things education does for students. Vocational agriculture prepares students for life. They are taught entrepreneurship through a supervised occupational experience program (SOEP). They are taught leadership, teamwork, and self-esteem through FFA. They learn community involvement and good citizenship through various projects.

John Bishop says, "If you can't use it, don't teach it." There are many things we have learned in school that we don't use 20 years later. What remains with us is the pleasure we obtained from the music or art class, the appreciation of language and culture, but most importantly, the process of learning is something we use throughout a lifetime. We learn how to think, how to reason and solve problems, how to learn. This is what employers say they want—young people who are eager and willing to learn, who are responsible, who come to work on time, and who work hard.

The Assessment should look at the qualitative features of vocational programs, as well as the quantitative ones. In many cases, course content is unimportant compared to what happens between the student and teacher. The student develops self-esteem, builds character, experiences success, and knows someone cares.

Good vocational programs keep kids in school. I had a potential dropout last year who is still in school because of a teacher who cares. Cynthia participated in floral design contests around the state. At the second event she won a blue ribbon. The teacher took the team to McDonald's afterward, and Cynthia told the group that this was the first time in her life that she had ever won anything.

One final comment: The Perkins Act and its immediate predecessors specifically targeted populations "underserved" by vocational education. Traditionally in this field, the adjective "underserved" has been used to describe (1) cultural and linguistic minorities and (2) women (particularly single mothers, displaced homemakers, and females aspiring to nontraditional careers). I would like to suggest that there is another, largely unserved cohort. College-bound high school students need vocational courses as much as any other group. For them, vocational offerings can develop both career and personal interests. I wish I had learned some practical skills. I'm an amateur gardener who would have benefitted from landscape design, horticulture science, and other practical courses. If we think creatively about the possibilities for secondary vocational education, I believe its future is very bright.

VI. THE FEDERAL ROLE IN VOCATIONAL EDUCATION AND IMPLEMENTATION OF THE CARL D. PERKINS ACT

Analyzing the Implementation of Federal Vocational Education Policy: The Perkins Act of 1984

Richard F. Elmore

The Federal Role in Vocational Education

E. Gareth Hoachlander

Comments on the Federal Role in the Vocational Education and Implementation of the Carl D. Perkins Act: A Discussion

Marion B. W. Holmes

Comments on the Federal Role in Vocational Education and Implementation of the Perkins Act

Charles W. Radcliffe

ANALYZING THE IMPLEMENTATION OF FEDERAL VOCATIONAL EDUCATION POLICY: THE PERKINS ACT OF 1984

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Two Models of Implementation Analysis

There are at least two distinctive approaches to the study of policy implementation. The first focuses on compliance with statutory requirements, in the expectation that compliance leads to certain outcomes that are consistent with the intentions of policymakers. The second focuses on the capacity of implementing organizations—defined as money, qualified staff, knowledge, interorganizational ties, and the like—in the expectation that these are the key determinants of outcomes, regardless of level of statutory compliance.

The Compliance Approach

The first approach is perhaps the most intuitively obvious way to study implementation and the way that is most consistent with traditional views of rational analysis and policymaking. Statutory compliance is the dependent variable, which in turn functions as an intermediate variable in predicting outcomes. We can predict the degree of implementation using certain independent variables, such as the precision and clarity of statutory objectives, the extent of behavioral and institutional change required by the statute, the validity of the underlying causal theory relating policies to outcomes, the degree of structural integration among implementing units, consistency of statutory objectives with the objectives of implementing organizations, commitment and skill of implementing officials, support from interest groups and key policymakers for statutory objectives, and stability in objectives over time. The underlying notion of this approach is that if certain predictable conditions are met, then successful implementation will occur, and if the causal theory behind the policy is correct, then certain outcomes will follow (Mazmanian & Sabatier, 1983).

An analysis of the Perkins Act using this framework would (1) isolate certain key statutory provisions (restructuring of state advisory committees, coordination with the Job Training Partnership Act [JTPA], funding of set-asides for special target populations, etc.); (2) examine the degree of implementation of these provisions across a sample of states and localities; (3) predict variations in implementation of these provisions using the kind of variables outlined above; and (4) suggest changes in federal policy or administration that would increase the likelihood of state and local compliance with key statutory provisions. Again, the underlying notion is that success in implementing these statutory requirements will result in certain outcomes that Congress desires.

In practice, the problems with this approach to the study of implementation are legion. First, the compliance approach considerably overstates the power of statutory compliance in determining outcomes, especially for federal policy. Federal grants-in-aid typically constitute a small proportion of total public and private expenditures in the areas they seek to influence. Vocational education is no exception.

Second, even if they did constitute a larger proportion of total expenditures, grants-in-aide typically work on the margin of forces far more powerful than they are in determining outcomes. The amount and distribution of employment among young people, for example, are influenced to a much greater degree by individuals' family background, aggregate economic activity at the national and regional level, and private personnel and training decisions than by anything vocational educators do. To suggest that implementing the statutory requirements of the Perkins Act will result in some aggregate improvement of the employment prospects of certain classes of young people leaves out a great deal, to say the least.[1]

Third, the compliance approach implies that statutes, and their accompanying guidelines and regulations, typically contain far more information than they actually do. The Perkins Act is a relatively clear statement of federal objectives and the means of achieving them. Hence it comes close to meeting the clarity criterion of the compliance approach. But if one asks whether the Act contains enough information to mount an effective vocational education program (whatever that means) at the state or local level, the answer must be—as it always is with federal policy—an emphatic no. The reason for this gap is that statutes are designed to initiate action, rather than to specify exactly what is to be done, and to muster the political support necessary to construct a winning legislative coalition, rather than to anticipate and solve operating problems. State and local administrators, direct providers of education and training, and clients of the system provide the missing information about what constitutes a good program. Hence, statutory compliance usually bears an aggravatingly unpredictable relationship to success at the programmatic level. Some varieties of success are directly traceable to statutory compliance, others are not. State and local vocational educators have had nearly 70 years' experience complying with federal policy, without necessarily producing effective programs.

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[1] One could argue, of course, that this is not a problem with the compliance approach, but with the "theory" underlying vocational education policy. But if this were so, the weakness would apply to a whole class of policies—namely, those in which the rules and revenue supplied by the federal government are relatively weak determinants of the outcomes sought by policymakers. An approach that can't be applied to such a large class of policies can't be a very useful analytic device.

Fourth, the compliance approach isn't very helpful in discriminating among causes of implementation failures. A list of conditions like that presented in the compliance approach can be read in at least two ways—either all the conditions must be present for successful implementation, or some optimum combination. If the former, then the approach isn't useful at all, because all conditions can never be present in their fullest form in any nontrivial policy. If the latter, then we are left to specify the conditions that are appropriate for a given policy, which means that it is not the conditions themselves that predict success, but their interaction with other unspecified factors. I have called this the "if-we-had-some-ham, we-could-have-some-ham-and-eggs, if-we-had-some-eggs." problem. A list of factors doth not an explanation make.

The compliance approach to the study of implementation does, at least, focus attention on the question of whether statutory requirements are being implemented by lower-level administrators and whether there is support or resistance to statutory objectives at those levels. In this sense, the approach provides useful information. What is most problematical about this view is that compliance often bears a distant and incomplete relationship to anything we're comfortable calling success. A preoccupation with compliance in the design of evaluations produces, not surprisingly, more compliance, but it does not necessarily produce better programs.

The Capacity Approach

The capacity approach looks at implementation from the point of view of problem solving in delivery-level organizations. It assumes that policy is designed to focus the attention of key actors on a set of problems. Statutes set the frame of reference for determining which problems are important, and what outcomes are regarded as success. Administrators and service deliverers in certain key implementation roles perform at least two important functions—they "fill in" the details of problems at their level and they bring the resources of organizations and individuals to bear on solutions.

In this sense, implementation is not compliance, but a kind of custom assembly process in which money from a variety of sources, individual and institutional knowledge, local coalitions, and clients are brought together in certain ways for certain purposes with certain specific effects (Bardach, 1977). Policies succeed to the extent that they mobilize the skills, resources, and incentives of key actors around the problems that policymakers consider important. The determinants of success in the capacity approach lie less in statutory requirements and compliance with them than in the attributes of the organizations and individuals that implement them.

Among these determinants are the ability of administrators to find cases or clients who exemplify the problems that policymakers want solved, to invent solutions to those problems, to mobilize money and knowledge from a number of sources around those solutions, and to use rewards and penalties consistently in the service of these solutions.

Policies operate on the margins of decisions by key actors, and are seldom the sole, or even the most influential, determinant of the outcomes expressed or implied in policies. Responses to policies are expected to vary across settings, because problems vary, capacities vary, and other policies compete for the attention of implementers (Levin & Ferman, 1985; Elmore, 1985).

Seen from this perspective, the Perkins Act is one of a number of expressions by the Congress of certain chronic problems in the relationship between school and work for young people. Among these problems are (1) the maldistribution of opportunities for vocational preparation among certain groups of young people; (2) the looseness of the relationship between secondary schooling opportunities and opportunities for entry-level work; (3) the sluggishness of vocational education in adapting to changes in the structure and technology of the labor market; and (4) the lack of coordination among various local and regional institutions that purport to prepare people to enter the labor market, notably secondary schools, vocational-technical institutes, community colleges, private providers of training, and community-based organizations. The Act is a charge to the loose collection of organizations that are recipients of Perkins Act funds to frame solutions to these problems. Compliance with the statutory provisions of the Act may be a necessary minimum condition for the solution of these problems. Success, from a national perspective, consists of capturing examples of seemingly successful solutions to these chronic problems and using these successes to influence practice in other settings.

Implications of the Two Approaches

The compliance and capacity approaches have very different implications for the design of a national study of vocational education. A study that focuses on compliance will deliver a great deal of information about whether specific statutory provisions are in place and whether state and local administrators agree or disagree with those provisions, but will deliver little useful information about what works in local settings. A study that focuses on capacity issues will deliver little information about whether specific statutory provisions are in place, and a great deal of information about local solutions to the menu of problems specified by Congress.

In reality, any study that is responsive to the congressional mandate will incorporate elements of both approaches, so the distinction I have developed here is somewhat, but not wholly, artificial. Implementation studies tend to veer in one direction or another, and when constraints of time and money are severe, they tend to veer in the direction of compliance, on the assumption that what policymakers really want to know is whether the provisions of the statute are being followed. It should be clear from what I've said that veering too strongly in the direction of compliance will not produce much that is useful in solving the problems that seem to be troubling Congress.

Some Special Problems of Vocational Education

One way to view the past 25 years or so of federal policy toward vocational education is as an extended family argument between vocational education and its congressional patrons. Like most family arguments, this one simmers for long periods and erupts episodically with the reauthorization of federal vocational education legislation; the combatants are locked together by family ties that run much deeper than the immediate causes of their conflict. As with most family arguments, the causes of this one are complex beyond understanding. But let me, as an outsider, advance one interpretation. Vocational education is the oldest of the federally initiated education delivery systems. It has coalesced (some would say calcified) around certain well-established institutions with strong political roots in states and localities, and possesses a higher degree of political autonomy than most other education subgovernments. The vocational education subgovernment includes a wide array of institutions that represent very different, often contradictory, interests. Deep in the tradition of vocational education is the idea that, at the secondary level, vocational education is more than just preparation for work; it is a way of engaging the interests and motivations of young people to learn in ways that are different from the ways of traditional academic subjects. Another important tradition is vocational education's (largely unsuccessful) battle to become an equal partner with the academic subjects in secondary and postsecondary schooling.

Federal policy has, since the mid-1960s, shifted away from these traditional roots and toward a more clearly instrumental view of vocational education. From Congress' perspective, a major purpose of vocational education is to provide opportunities for access to the labor market for certain protected classes of young people. The vocational education subgovernment has accommodated this shift in federal perspective, but not without a good deal of stress and conflict.

This situation has been vastly complicated by the growth of the federally funded employment and training system, which, in contrast to the vocational education system, is funded almost entirely with federal money, is targeted exclusively on those whose family background and income put them at high risk of unemployment, and is delivered through a parallel and only partly overlapping set of local institutions. A significant motivation behind the creation of this parallel delivery system[2] was frustration on the part of federal policymakers with the unresponsiveness of established institutions—notably vocational education and the employment service—to national problems of structural unemployment. The employment and training system has developed its own subgovernment, less politically powerful and autonomous than vocational education, but in many ways more responsive to the instrumental view of vocational education.

The result of this peculiar family argument between vocational education and its congressional patrons is the most complex and disarticulated system of vocational training in the industrialized world. The norm in industrialized countries is to provide a basic education, with little pretense of vocational preparation, up to about age 16, and then to provide a clearly differentiated multitrack system leading to skilled trades, technical and white-collar occupations, and university education (Rist, 1986). This multitrack system is typically closely articulated with a large-scale apprenticeship system for skilled trades, and with work experience for technical and white-collar occupations. Organized labor and employers usually play a large role in helping to provide training places for new entries to the labor force (Williams, 19891).

By contrast, the U.S. system (if it could be called that) consists of highly differentiated, parallel delivery structures for general secondary education, secondary vocational education, postsecondary technical and vocational training, programs for high-risk youth, and college or university education. Many clients of this system drift in and out of various options without ever negotiating access to an entry-level job that has a career path attached to it. The system caters well to young people who have a strong sense of direction, or who have strong adult guidance. It works poorly for that significant fraction of young people who have neither of the above. The typical pattern of movement for noncollege-bound young people is a kind of directionless "milling around," which the system encourages because no institution takes responsibility for any clearly defined segment of the population. Evidence of this milling around can be found in the high school dropout rate, in the proportion of young people who receive vocational training that has nothing to do with their entry-level work or their later careers, in the proportion of young people enrolled in vocational programs for which the rate of return is negative or zero, and in the proportion of young people who never receive occupational training at all.

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[2] Charles Radcliffe, a former congressional staff member with long experience in federal and local vocational programs, argues in his comments on this paper that Congress did not intend to create a "parallel delivery system" with federal employment training policy but simply a funding mechanism for state and local activities. His point is well taken, but whatever congressional intent, the effect of federal employment training policy has been to establish a separate and in some senses competing delivery structure at the state and local levels.

These highly differentiated, parallel structures are well suited to the U.S.'s federal structure, vast territory, and regional economic diversity, as well as to a dominant ideology that attaches blame for failure to individuals and assumes little collective responsibility. The structures reinforce the illusion that young people have a vast array of choices and that success depends on individual grit, persistence, and motivation. In fact, the structures are so complex that they reward social class more than grit, and they perpetrate social inequalities more than they repair them.

So, to be blunt, the federal government has "solved" the problem of the unresponsiveness of vocational education to national priorities in part by creating parallel delivery structures and in part by using federal funding as a lever on vocational programs. Neither approach has been stunningly successful in the aggregate, although both have produced some significant state and local successes. The main result is a system of vocational preparation of vast and largely unfathomable dimensions, well understood only by subgovernment insiders, and incomprehensible to nearly everyone else, including its clients.

Some Design Recommendations

When we put models of policy implementation side-by-side with the special problems of vocational education in the U.S., some interesting possibilities for analysis arise. First, it goes without saying that some proportion of any national assessment will have to deal with state and local compliance with key provisions of the Perkins Act. It should be clear that my preferences lead me to recommend that this proportion be as small and as efficiently performed as possible, in order to leave resources for other more important subjects. I recommend this because I don't think that compliance has much to do with producing the kinds of outcomes that Congress had in mind when it passed the Perkins Act, but monitoring compliance is probably an important minimum condition in satisfying the congressional evaluation mandate.

For this purpose, some kind of sample survey, with the anonymity of respondents assured, will suffice. The key implementation questions underlying such a survey might be framed in the following ways:

- Have limitations on the use of funds for administrative purposes resulted in: (a) reduction of administrative functions; (b) redefinition of administrative functions to technical assistance; (c) shifting of administrative functions to other funding sources?

- Have JTPA collaboration requirements resulted in (a) more frequent interactions among vocational and employment training administrators; (b) joint programming; (c) arrangements for the transfer of clients among programs?

- Have special population set-asides resulted in (a) net increases or decreases in local services to special populations; (b) fewer or more separate programs; (c) greater administrative problems for state and local administrators?

These survey data could be complemented with the results of state and local case studies already underway. It is important to understand, however, that all this kind of data reveals is whether certain provisions of the statute are perceived to be working and whether they are causing state and local problems. There is already substantial evidence that states, and probably localities, are adjusting smoothly to the new requirements, despite certain low-frequency grumbles, though there is little evidence that this adjustment has yet had any discernible effect on the content or outcomes of vocational education.

The major problems with this kind of survey are, first, assuring that responses are valid given the potentially sensitive nature of the results; and second, determining whether the costs of the survey are justified by its returns. On the validity issue, regardless of how well the questions are worded or how well confidentiality of responses is assured, a survey will only measure reported behavior and perceived effects. This is valuable intelligence, because it helps policymakers spot potential sources of support and opposition and potential changes in the authorizing legislation to accommodate those views. If this is thought to be valid information by congressional clients, then it will be useful. The use of case studies to supplement survey data could connect participant reports and perceptions with actual behavior. This connection would require designing surveys and case studies around parallel questions, so the case studies would serve, in part, as a validity check on the findings of broader-scale surveys.

This issue of cost is important. Broad-scale surveys are expensive in both time and money, difficult to clear through the federal regulatory bureaucracy, and burdensome on respondents. But the issue of cost is, as always, relative. Actual direct observation of compliance in a sufficient number of sites to produce valid conclusions would be far more expensive than a survey, and, in light of the arguments outlined above, not much more useful.

Second, and more importantly, any National Assessment should include a component designed to describe and analyze examples of state and local administrative entrepreneurship that exemplify success in the achievement of key federal objectives—like service to special students, JTPA coordination, and creation of new training packages responsive to local economic shifts. My recommendation would be to focus these studies at the local and regional level, since that is where the problems of mounting and sustaining effective programs are greatest.

The design of this type of study should proceed in four stages: (1) identifying examples of success through existing research, state and local compliance surveys, and informal sources; (2) sorting examples for their relevance to key legislative priorities; (3) devising a case study protocol that focuses on factors that are likely to explain success; and (4) collecting data and writing short case studies of the examples. It is important in this kind of research to specify relatively stringent indicators of "success" in the local achievement of federal objectives at the beginning of the study and to sustain these indicators throughout. So, for example, one could design a series of cases of vocational education-JTPA collaboration that stipulate that only projects with joint administration, addressing very high-risk youth, with very successful placement rates would be considered.

The point of these studies is not to produce a statistically representative profile of what's going on—indeed, there are likely to be relatively few examples in each category. Rather, the point is to create landmark cases that demonstrate the problems involved in successful programming and the strategies that successful administrators use in solving those problems. The studies would be useful both as exemplary models for administrators and as intelligence for federal policymakers on the difficulties of mounting successful programs within the constraints of the policy and institutional arrangements.

The major weakness of such studies, of course, is that they aren't directly translatable into federal policy or state and local practice. Because they are exceptional, they invite the criticism that the special circumstances surrounding them are not transferable to other settings. On the other hand, equating successful implementation entirely with statutory compliance, by studying only how well states and localities are adjusting to new requirements, leaves out the most important determinant of successful state and local programming—the skill and capacity of delivery organizations. Calling attention to administrative entrepreneurship in the service of federal policy objectives is an important complement to the more traditional view of implementation, and a useful way of providing inspiration and guidance to vocational administrators who want to manage more effectively.

The practical effect of any such study depends heavily on dissemination. A series of short and pithy pamphlets reporting the results of the study and a series of workshops explicitly designed to promote entrepreneurship among local administrators could strengthen the connection between research and practice.

Third, and more problematical, I would recommend a series of studies that treat the individual student as the unit of analysis and track a sample of students in classes relevant to federal policy through types of education, training, and work experience in certain localities. The underlying hypotheses of such a study are (1) that the structure of the local delivery system sets constraints on the education and training available to young people; (2) that the structure of the existing system does not encourage students to make commitments to a sustained course of action leading to employment, but rather to choose a variety of options serially that don't bear much relationship to their ultimate work; and (3) that those young people who do negotiate entry to relatively stable employment early in their careers do so through connections that are mediated by influential adults, rather than education and training per se.

Most studies of education and employment that take the individual as the unit of analysis are designed on human capital models that don't specify either the array of options available to individuals or the ways in which individual choices are mediated by other individuals and institutions. We learn from human capital studies a great deal about the investment behavior of young people and about the rates of return of various investments in education and training for various classes of young people, but we learn almost nothing about how policy and the structure of the delivery system determine those choices for various types of young people.

Studies of this third type would provide a much-needed link between studies of the aggregate effects of education and training and studies of exemplary programs. We can find isolated examples where vocational education seems to work in the ways that federal policy prescribes, but it doesn't seem to work in those ways for most young people. Likewise, we can demonstrate that vocational education has positive effects for some proportion of young people who are exposed to it, but we don't know how to increase that proportion reliably using the tools at our disposal. Introducing structural variables into individual analyses provides a way of understanding the consequences for young people of the ways in which we have structured the delivery system for education and training.

It should be clear from what I have said that, insofar as policy implementation figures in a national assessment of vocational education, my recommendations are that it should focus on capacity rather than compliance. I have suggested two ways in which this can be done—by analyzing examples of state and local administrative entrepreneurship that demonstrate federal objectives and by introducing detailed structural variables into analyses of individual choices of education, training, and work. Insofar as compliance is an issue for Congress, it can be addressed simply and inexpensively through sample surveys.

References

Bardach, E. (1977). The implementation game: What happens after a bill becomes a law. Cambridge, MA: MIT Press.

Elmore, R. (1985). Forward and backward mapping: Reversible logic in the analysis of public policy. In K.Hans and T. Toonen (Eds.), Policy implications in federal and unitary systems (pp. 33-70). Dordrecht, The Netherlands: Martinus Nijhoff.

Levin, M. & Ferman, B. (1985). The political hand: Policy implementation and youth employment programs. New York: Pergamon.

Maxmarian, D. & Sabtier, P. (1983). Implementation and public policy. Glenview, IL: Scott Foresman.

Rist, R. (Ed.). (1986). Finding work. London: Taylor and Francie, Falmer Press.

Williams, S. et al. (1981). Youth without work: Three countries' approach to the problem. Paris: Organization for Economic Cooperation and Development.

THE FEDERAL ROLE IN VOCATIONAL EDUCATION

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Introduction

Last year in a small rural school district 30 miles northeast of Richmond, Virginia, a new director of special education and a new high school principal joined the Assistant Superintendent for Vocational and Special Education as the newest members of the district's tiny administration. In this sparsely populated farming district enrolling about 1,300 students, over half the high school students are disadvantaged and almost a tenth are handicapped. All three administrators strongly support mainstreaming handicapped students in vocational education, a position opposed by the previous principal and resisted by most of the high school's vocational education teachers. "The Perkins Act has had a major impact here," says the new special education director. "It's given us the leverage to get most of our handicapped students into regular vocational education classes." The vocational education director adds, "We've used our handicapped set-aside funds to purchase a vocational assessment kit that will help us place special education students in appropriate programs and help us reassure vocational education teachers that these students can handle their classes." One year after the arrival of two new administrators committed to mainstreaming, with a bit of help from federal legislation, all but 10 of the district's 58 handicapped students enrolled in vocational education have been mainstreamed into the high school's regular programs.

This is but one of several success stories in the recent history of vocational education policy, which if it has not been the direct cause of change—the persistence of some very dedicated individuals deserves much of the credit—at least has acted as an important catalyst.[1] There have, however, been some notable failures. Across the country in California, two of the state's major cities, Los Angeles and Oakland, report no students with limited English proficiency in vocational education, an astonishing fact in areas with some of the largest and fastest growing Hispanic and Asian populations in the country. In reality, of course, students with limited English proficiency are enrolled in large numbers in vocational education in these districts. For reporting purposes, however, these districts have discovered that they will have more flexibility in determining how to spend the disadvantaged set-aside in the Perkins Act if they simply count these students as disadvantaged, legal chicanery but hardly in keeping with the spirit of the law. Nor are these California districts alone in their discovery of this loophole.

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[1] Generally, federal funds tend to support and reinforce the efforts of local individuals or groups whose aims are consistent with those of federal policy. Federal policy thus provides resources that would not otherwise be available to support these objectives. Whether federal policy actually stimulates more state and local spending on these aims is debatable, but total spending almost certainly is higher.

Throughout its 70-year history, federal vocational education policy is replete with a mixed bag of similar successes and failures. The Smith-Hughes Act of 1917 recognized in a modest way the rise of the "manual arts" movement and touched off a debate that continues to this day over the appropriate role of vocational education in the secondary curriculum. The Vocational Education Act of 1963, the first major piece of vocational education legislation after Smith-Hughes, had two major goals, to stimulate state and local spending for vocational education and to improve the vocational education opportunities for students with special needs.

By 1974, the first goal had been accomplished with spectacular success. From 4.6 million students enrolled in vocational education in 1964, enrollments grew to 13.8 million in 1974, and state and local expenditures for vocational education during the same period rose from $278 million to nearly $3 billion. The second objective, however—increased access for students with special needs—languished, despite stronger language in the 1968 Amendments. A highly critical report issued by the General Accounting Office in 1974 charged that states had distributed federal funds without regard to need and without giving priority to efforts for program improvement or expansion; the bulk of federal funds was being used simply to maintain existing programs, many of poor quality (U.S. General Accounting Office, 1974). Moreover, the report found that states were not complying with the matching requirements for federal funds set aside for handicapped and disadvantaged students. Generally, the report concluded that improving the access of students with special needs to high quality vocational education had not received high priority. It also noted that sex stereotyping was pervasive throughout the vocational education curriculum.

The 1976 Amendments, the last major revision of the Vocational Education Act prior to the Perkins Act, sought to correct these deficiencies. For the 1976 Amendments, however, hardly any aim was outside the purview of federal policy. Reduced youth unemployment, expansion of new programs, greater fiscal equality among local school districts, meeting new and emerging manpower needs, improved planning and evaluation, better data—these aims, coupled with reduced sex stereotyping and improved access for the handicapped, the academically and economically disadvantaged, and students with limited English proficiency effectively condemned federal policy to failure. By this time, the federal dollar amounted to less than one in 10 of every dollar being spent for vocational education, and state and local officials complained incessantly, and with justification, about the proverbial "tail wagging the dog." The National Institute of Education (NIE) agreed. In 1981, completing a five-year comprehensive assessment of vocational education, the Vocational Education Study concluded:

- The Vocational Education Act of 1963, as amended, attempted to accomplish too much with too few resources;
- There were sometimes mismatches between the ends of federal policy and the means relied upon to realize them; and
- The ends of federal policy depended heavily upon state and local policies, practices, and resources (NIE, 1981).

In short, the study described a history of ambiguous and often contradictory regulation that had increasingly alienated vocational administrators and educators and generally failed to realize the intent of Congress.

We come, then, to existing federal policy. The Carl D. Perkins Vocational Education Act of 1984 seeks to overcome many of the shortcomings of past legislation. It aims to concentrate federal policy on two major objectives: (1) assisting the states to expand, improve, modernize, and develop quality vocational education programs; and (2) ensuring that individuals who are inadequately served under vocational education are assured access to quality vocational education programs. It simplifies requirements for state planning, data collection, and reporting. It emphasizes increased private sector involvement to help keep programs abreast of new developments in industry. Contradictory criteria for distributing funds within states have been eliminated, and states have been given considerably more discretion over how funds are allocated to local school districts and postsecondary institutions.

Many features of past legislation, however, have been maintained. The Perkins Act continues to rely on set-asides to improve access for special populations, accepting the dubious assumption that spending money on students with special needs will result in programs and services of high quality. State and local matching of excess costs has also been retained. Many definitions remain imprecise and, in some instances, unworkable. For example, exactly what is meant by "program improvement," and in the absence of a clear definition, how are states to know whether they are spending funds appropriately?

Thus, the new legislation in some ways represents an improvement over past efforts, but it appears that several problems remain. How best, then, should we assess its impact and, more generally, the condition of vocational education in the mid-1980s? The remainder of this paper suggests some possibilities.

Toward a Better Understanding of Vocational Education

If we are to increase the effectiveness of federal vocational education policy, it is first essential that we gain a better understanding of the vocational education enterprise. It has become rather commonplace to speak of vocational education monolithically as though it were a separate, undifferentiated part of the curriculum with a clear, single mission of preparing students for work. We cavalierly use such terms as the "academic," "general," and "vocational tracks," as though we clearly understand the content of each and believe that something useful is accomplished by sorting students in such a fashion. In fact, the vocational education enterprise is extraordinarily diverse, at both the secondary and postsecondary levels. Let us begin with a brief look at the secondary system, since that is what most people seem to have in mind when they talk about vocational education--a view that is too limited, to be sure, but we will have more to say about that in the section below on the postsecondary system.

Secondary Vocational Education

For purposes of federal policy, the Perkins Act defines vocational education as:

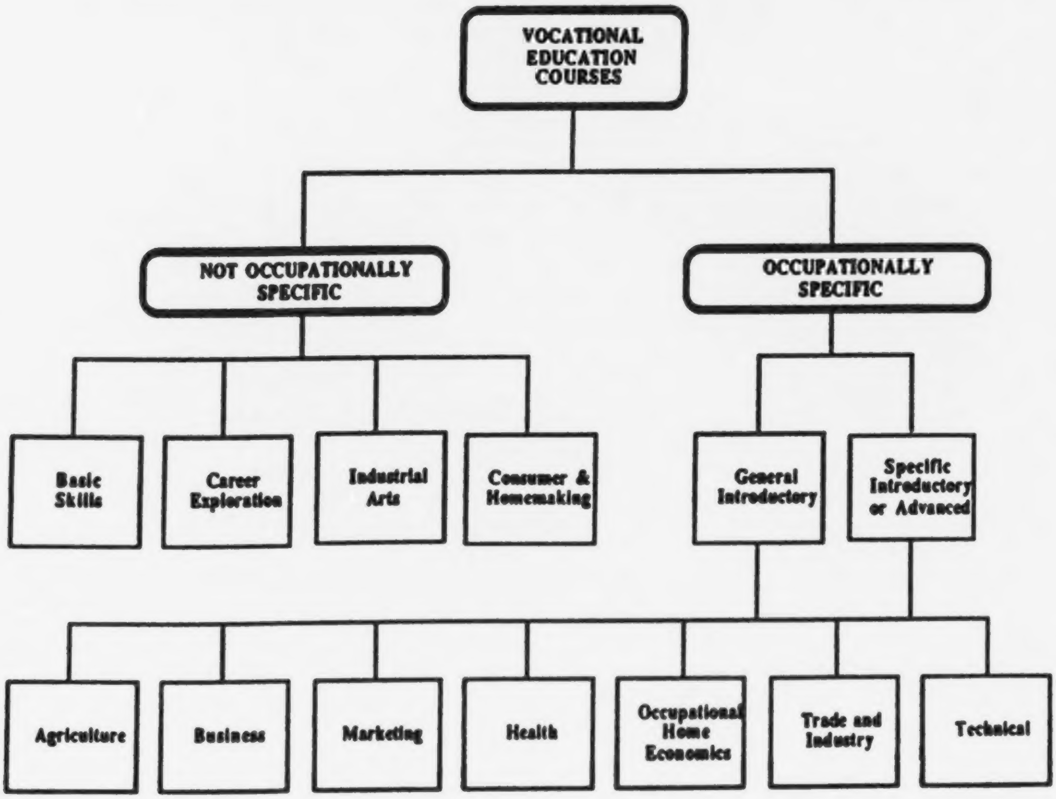
> . . . organized educational programs which are directly related to the preparation of individuals for paid or unpaid employment in such fields as agriculture, business occupations, home economics, health occupations, marketing and distributive occupations, technical and emerging occupations, modern industrial and agriculture arts, and trades and industrial occupations, or for additional preparation for a career in such fields, and in other occupations, requiring other than a baccalaureate or advanced degree. . . [Section 521(31)].

When defined so broadly, vocational education encompasses a large part of the secondary curriculum. Indeed, by this definition, over 90 percent of 1980 high school sophomores had participated in "vocational education" (including courses classified as business math, typewriting, computer programming, and career exploration) by the time they graduated in 1982 (Owings, 1984). Under this definition, virtually every secondary student is a vocational education student, and the term becomes meaningless. Therefore, a method is needed to distinguish vocational education programs and students more clearly.

Figure 1 displays one possible approach to establishing a taxonomy of vocational education courses. At the most general level, this taxonomy divides vocational education courses into two types: (1) not occupationally specific, and (2) occupationally specific. In the first category, we include all courses that are not preparing students for a specific occupation or occupational area. These courses are further subdivided into four types: (1) basic skills (e.g., business math, business English, etc.), (2) career exploration, (3) industrial arts, and (4) consumer and homemaking education. Appendix A provides a complete listing of courses included in each category of the taxonomy.

FIGURE 1

A TAXONOMY OF VOCATIONAL EDUCATION COURSES


VOCATIONAL EDUCATION COURSES
NOT OCCUPATIONALLY SPECIFIC
OCCUPATIONALLY SPECIFIC
Basic Skills
Career Exploration
Industrial Arts
Consumer & Homemaking
General Introductory
Specific Introductory or Advanced
Agriculture
Business
Marketing
Health
Occupational Home Economics
Trade and Industry
Technical

The case for isolating these four types of courses is straightforward: none of these courses has as its primary objective preparing students for paid employment, and hence none can be fairly evaluated on these terms. In the case of such courses as business math, imparting basic skills is the primary objective. They differ from their counterparts in the general or academic curriculum mainly in the types of examples that are used to impart basic skills. Career exploration has as its aim familiarizing students with the wide variety of career options available to them rather than preparing them for any single one. Industrial arts courses are not intended to prepare students for a specific trade or occupation but rather to familiarize them with the "culture" of the industrial world and expose them to the manual arts. Consumer and homemaking courses, as the name implies, seek to strengthen students' skills as consumers, homemakers, and parents—roles performed outside the paid workforce.[2]

We divide occupationally specific courses into two categories: (1) general introductory, and (2) specific introductory and advanced. All of these courses have as one of their primary objectives preparing students for paid employment in specific occupations or trades. In the general introductory category, we include the introductory courses for each of the seven major program areas: agriculture, business, home economics (preparation for paid employment only), health, marketing and distributive education, technical, and trade and industrial. We have chosen the term "general introductory" rather than "exploratory" because the latter term implies that such courses are the appropriate vehicle for students to experiment with different career possibilities. While this may be true to a limited extent, taking a large number of introductory courses in different program areas will generally be an inefficient means of career exploration and very wasteful of a student's limited learning time as a secondary student.

In the category of specific introductory and advanced, we include introductory courses in subareas (e.g., Introductory Drafting, Introductory Electronics, Horticulture I, etc.) in each of the seven major program areas, as well as the remaining advanced courses. Typically, these courses have as one of their major objectives imparting job skills that are specific to a particular trade or industry.

This taxonomy has several attractive features. First, it recognizes the diversity of objectives existing among different parts of the vocational education curriculum and helps to ensure that when outcomes are analyzed, the outcomes are consistent with the aims of different types of courses. For example, that part of the curriculum that is not occupationally specific is no more concerned than other nonvocational courses with improving the specific employment prospects of students, and it should not be expected to produce markedly different employment outcomes for students who take courses primarily in this area of vocational offerings. Second, using the taxonomy does not depend on sorting students by the traditional categories of "academic," "general," and "vocational" that implied that each of these categories was mutually exclusive; the taxonomy will permit a more systematic analysis of the course-taking patterns of students in all aspects of the secondary curriculum. Third, the taxonomy does not require isolating vocational education students but rather enables us to ask four important questions about all secondary students:

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[2] Some consumer and homemaking courses are intended to prepare students for paid employment in such fields as day care, nutrition, sewing, etc. These courses are included under the occupationally specific category.

- What are the vocational course-taking patterns of secondary students?
- How many vocational courses do secondary students take in each category?
- What are the characteristics of students exhibiting different types of course-taking patterns in vocational education?
- What happens after high school to students exhibiting different patterns of course taking in vocational education?

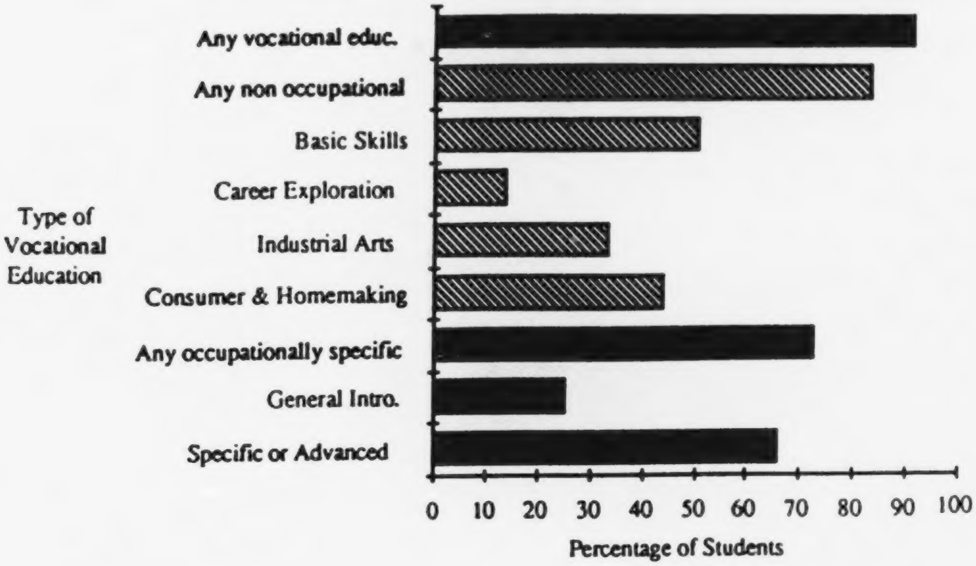
We used this taxonomy to analyze the course-taking patterns of the 1980 Sophomore Cohort from High School and Beyond, the longitudinal data base maintained by the Center for Statistics on a sample of about 30,000 high school sophomores and seniors in 1980. The results underscore the need to view vocational education less uniformly.

Figure 2 shows that, by the time they left high school, 92 percent of the 1980 sophomores had taken at least one vocational education course during their secondary education careers. Over 80 percent had taken at least one course in the nonoccupationally specific part of the curriculum, and over 70 percent had taken at least one occupationally specific course. Looking more closely at the nonoccupationally specific courses, we find that over 50 percent had taken one or more courses in basic skills, 14 percent had taken courses in career exploration, 34 percent had taken courses in industrial arts, and 44 percent had taken courses in consumer and homemaking. Within the occupationally specific curriculum, 25 percent had taken general introductory courses, and 68 percent had taken specific introductory or advanced courses.

Rates of participation do vary among different types of students, but not with the degree that one might expect given the conventional wisdom about who takes vocational education courses. For example, as displayed by Figure 3, a greater proportion of students from low-income families had taken vocational education courses than students from high-income families, 89 percent versus 75 percent for nonoccupationally specific courses and 77 percent versus 67 percent for occupationally specific.

FIGURE 2

PERCENTAGES OF 1982 SENIORS HAVING TAKEN VOCATIONAL EDUCATION COURSES DURING HIGH SCHOOL



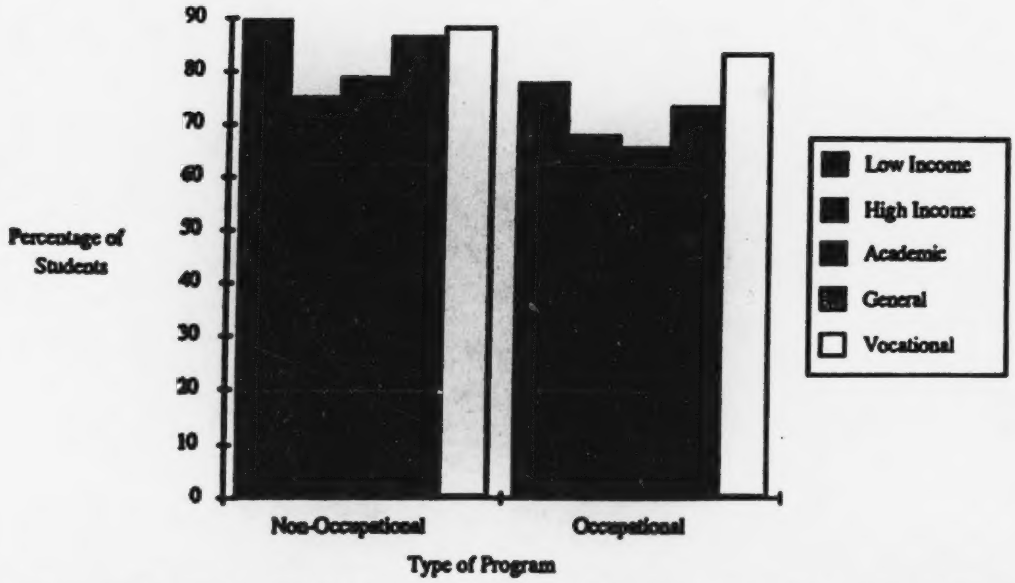
Source: High School and Beyond Tabulation, *Classifications of Secondary Vocational Education Courses and Students*, prepared by MPR Associates, Inc. for the Center for Statistics, U.S. Department of Education, February, 1986, Table 2, p. 5.

Similarly, participation rates vary among students depending on whether they describe themselves as being enrolled in the academic, general, or vocational track. Not surprisingly, 83 percent of those who reported themselves to be enrolled in the vocational education track had taken at least one occupationally specific course, but so had 73 percent of those who said they were in the general curriculum and 66 percent of those who said they were in the academic curriculum.

Participation rates, of course, tell an incomplete story. How much vocational education did these high school students take? During their high school careers, these students averaged a total of 19.5 Carnegie units in all subjects. On the average, these students earned 3.8 units, or about 20 percent of their total units, in vocational education courses--evenly divided between 1.9 units in nonoccupational courses and 1.9 units in occupationally specific courses. Interestingly, at this level of aggregation, there was little variation by race or sex. Whites averaged 3.9 units in vocational education, compared to 3.7 units for blacks, 3.6 units for Hispanics, and 2.7 units for Asians. In occupationally specific courses, whites averaged 2.0 units, blacks 1.9 units, Hispanics 1.8 units, and Asians 1.2 units. Overall, girls averaged slightly more units than boys, 3.9 compared to 3.7, but both boys and girls averaged 1.9 units in occupationally specific courses.

FIGURE 3

PARTICIPATION IN VOCATIONAL EDUCATION BY TYPE OF STUDENT BY TYPE OF PROGRAM



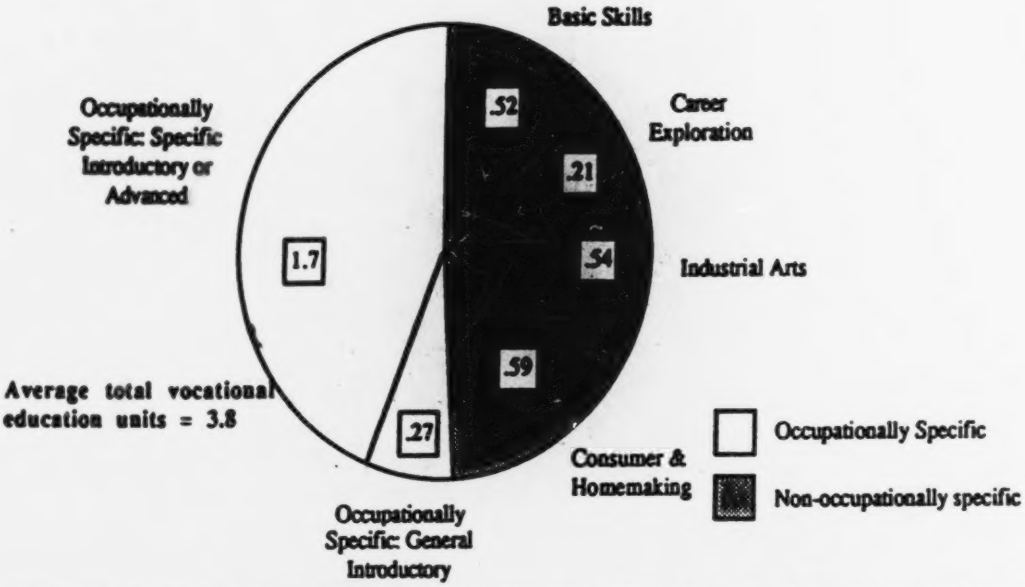
Source: High School and Beyond Tabulation, *Classifications of Secondary Vocational Education Courses and Students*, prepared by MPR Associates, Inc. for the Center for Statistics, U.S. Department of Education, February, 1986, Table 2, p. 7.

Students who described themselves as vocational averaged a total of 5.4 units in vocational education courses, compared to 3.7 units for students who said they were in the general program, and 2.7 units for those who said they were academic. Vocational students averaged 3.0 units in occupationally specific areas, compared to 1.7 units for general students and 1.3 units for academic students.

What is so interesting about these figures is that while there are some clear differences among students describing themselves as vocational, general, or academic, the absolute magnitudes of the differences are not as great as the conventional wisdom might lead one to believe. Vocational students clearly accumulated more units in vocational education than other students, but on the average, they earned only 1.3 more occupationally specific units than general students and only 1.6 more occupationally specific units than academic students. Extending this analysis a bit further, we examined what proportion of students earned more than 3 units in a single occupational area—agriculture, business, health, etc.—reasoning that three units probably constitute the minimum amount of vocational education course work to produce any discernible impact on employment outcomes. Figure 5 shows that, overall, only about 22 percent of all secondary students had taken 3 or more units of occupationally specific vocational education in a single program area before leaving high school. Less than half, 41 percent, of students saying they were vocational had taken three or more units, compared to 16 percent of the general students and 12 percent of the academic students.

FIGURE 4

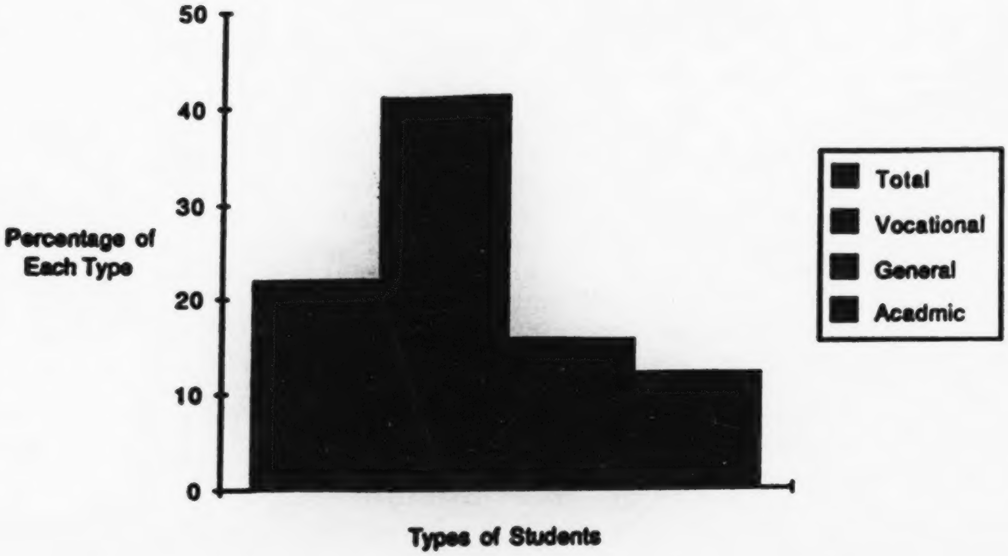
AVERAGE NUMBER OF CARNEGIE UNITS EARNED IN VOCATIONAL EDUCATION DURING HIGH SCHOOL



Source: High School and Beyond Tabulation, *Classifications of Secondary Vocational Education Courses and Students*, prepared by MPR Associates, Inc. for the Center for Statistics, U.S. Department of Education, February, 1986, Table 1, p. 1.

FIGURE 5

PERCENTAGES OF STUDENTS TAKING 3 OR MORE OCCUPATIONALLY SPECIFIC CARNEGIE UNITS OF VOCATIONAL EDUCATION IN A SINGLE PROGRAM AREA



Source: High School and Beyond Tabulation, *Classifications of Secondary Vocational Education Courses and Students*, prepared by MPR Associates, Inc. for the Center for Statistics, U.S. Department of Education, February, 1986, Table 7, pp. 25-27.

These findings raise some important policy questions. First, what is the proper standard for evaluating the effectiveness of the vocational education curriculum? Historically, employment outcomes have constituted the standard by which vocational education has been held accountable. By this measure, most research has found that vocational students fare no better in the job market than students in the general track. The patterns discussed above suggest several possible explanations for these research findings. Half the activity in secondary vocational education occurred in the nonoccupational areas of the curriculum. On the average, vocational students earned only 1.3 more units in occupationally specific courses than general students. Moreover, over half of the students declaring themselves vocational took fewer than three units in a single major area of the occupationally specific curriculum. In short, while a lot of secondary students take vocational education courses, most of them do not take very many, especially in the occupationally specific areas. Is it surprising, then, that participation in secondary vocational education appears to have little or no impact on the employment prospects of participants?

These findings have one very important research implication: when attempting to identify the employment outcomes of participation in vocational education, the availability of actual transcript data is essential for analysis. Relying on self-reported track as a proxy for course-taking patterns will produce very misleading results. Furthermore, because most vocational education students do not take enough vocational credits to have much of an impact on employment outcomes, outcome-related research will need to focus more carefully on that subset of secondary vocational students with a significant number of credits in occupationally specific programs.

Of course, if most secondary students do not spend enough time in vocational education for participation to have a significant effect on their employment prospects, regardless of the quality of the programs, one must ask what is the value of any time spent in the secondary vocational education curriculum? The answer to this question depends on several possibilities. First, vocational educators have long maintained that vocational education provides an effective alternative for imparting basic skills to students who are less academically inclined and need practical, "hands-on" experiences to stimulate their interest in reading, writing, and mathematics. This argument has a certain intuitive appeal, but the fact is we know very little about whether vocational education actually accomplishes this or, if it does, whether it could do an even better job of it.

Better research on this issue is critically important. The recent wave of elementary and secondary school reform, with its emphasis on increasing basic skills and raising academic requirements, has in many states significantly reduced the amount of time students have for vocational education. If, in fact, vocational education is a more effective means for imparting basic skills to some students, then forcing them back into other courses may not have the desired effect. Indeed, the impact of recent school reform on secondary vocational education should be a concern for the upcoming National Assessment of Vocational Education.

A second consideration for assessing the value of time spent in secondary vocational education is whether students taking vocational education simply need better direction on how to use the curriculum effectively. There is currently a great deal of unfocused wandering around in both the nonoccupational and occupational sectors of the curriculum. As noted earlier, this is a very inefficient way to explore careers. Should we severely limit the amount of vocational education students can take if the courses they elect do not constitute a reasonable sequence? Should we encourage students to complete sequences, perhaps by restricting their options to elect other courses once they have embarked on a particular vocational path? Should taking occupationally specific courses be restricted to the 11th and 12th grades, when basic skills should be stronger and when students are closer to employment or more intensive postsecondary training? These are difficult and controversial questions, but they need to be addressed if we are to better understand the role vocational education should play at the secondary level and how federal policy might facilitate that role.

A third consideration involves the relationship between vocational education taken in high school and further education and training after high school. We know virtually nothing about this relationship, although it is critical for any assessment of the worth of vocational education at the secondary level. The relatively low level of occupationally specific course taking at the secondary level is probably less cause for concern if further related training follows at the postsecondary level and if this postsecondary training can be shown to improve employment prospects. However, a unit or two of occupationally specific training in high school is probably much less valuable if no more training is pursued or if the student switches to an unrelated postsecondary career path. The interaction of vocational education at the secondary and postsecondary levels needs careful study and should yield important policy implications. This leads us to considering what we know about vocational education at the postsecondary level.

Postsecondary Vocational Education

Most postsecondary vocational education takes place in two-year community colleges, vocational-technical institutes, and proprietary schools. If vocational education has a significant pay-off in labor market terms, then it is certainly the postsecondary level where it occurs. Yet, we know shockingly little about postsecondary vocational education. In 1978, the National Center for Education Statistics (now the Center for Statistics) estimated that there were some 4.4 million students enrolled in vocational education at two-year higher education institutions (mostly community colleges), 0.7 million in public noncollegiate postsecondary schools (mainly vocational-technical institutes), 1.0 million in private noncollegiate postsecondary schools (proprietary schools), and 0.3 million in correspondence schools (also proprietary). That we have so much difficulty accurately labeling these institutions reflects just the beginning of our ignorance of postsecondary vocational education. Moreover, the figures are very rough estimates, at best. The credibility of the Vocational Education Data System (VEDS) was destroyed by its failure to produce believable numbers on many aspects of secondary vocational education (a failure that may have been somewhat overstated—see our comments below), but the figures on postsecondary vocational education from any national data set, save the longitudinal studies, are highly suspect for a variety of reasons.

For one, whether we are designing data systems or attempting to analyze data in a scholarly way, it is very easy to fall into the trap of assuming that the postsecondary system resembles the secondary system, except that students are a bit older and that we are analyzing grades 13-16 instead of grades 9-12.[3] In fact, nothing could be further from the truth, especially in the nation's community colleges, where the majority of postsecondary vocational education occurs. There are no precise statistics available, but in the absence of good data, consider the following.

First, many students attending postsecondary institutions offering vocational education attend part-time, and may start and stop their education many times over many years. A large proportion of students "matriculate" immediately after high school, but a significant percentage do not. These are adults of any age from 19 to over 70. From the cross-sectional data collections reported nationally, we have no idea who is who. Second, the distinction between vocational and nonvocational students is as blurred, if not more so, at the postsecondary level as at the secondary level. If community colleges were once primarily serving students seeking to transfer to four-year institutions (and there are really no data to support this claim), they are no longer. Very quietly and without any clear public policy decision, the mission of community colleges has changed radically during the last 15 years. The transfer function has atrophied, to the point that in a state like California no more than 15 percent of enrollees in community colleges transfer to four-year institutions. We have no accurate way of measuring this activity, for like the "nuclear family," notions of "normal progression" apply to probably less than 15 percent of the students attending community colleges or other institutions offering postsecondary vocational education.

In my view, the upcoming National Assessment of Vocational Education has no more important responsibility, indeed no more important opportunity, than clearly describing what is going on in postsecondary vocational education. The value of secondary vocational education, as well as crucial decisions about how to allocate federal funds between secondary and postsecondary vocational education, depend on greatly improving our knowledge in this area. Specifically, we need to know:

- Who participates in postsecondary vocational education?
- What are the institutional and course-taking patterns of those who participate?
- How do participants time their participation?

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[3] This happens in large part, I believe, because designers of data systems and analysts of data are products of "normal progression" in the postsecondary system. For them, "grades 13-16" were not very much different from grades 9-12, and it is therefore easy to assume that this is true of everyone.

- What are the economic payoffs of participation?
- How is participation related to secondary patterns of involvement in vocational education?
- What are the experiences of students with special needs?

This last question, concerning the experience of students with special needs, is far more difficult to address than most would imagine, again because we fail to understand how radically postsecondary education differs from secondary. Because of federal programs such as Chapter I (formerly Title I), P.L. 94-142 (The Education for All Handicapped Children Act), and Bilingual Education--all of which apply only to K-12 education—policymakers and researchers tend to assume that these special needs are as easily identified at the postsecondary level as at the secondary. In fact, nothing could be further from reality. It is exceedingly difficult for most postsecondary institutions to track and describe the experiences of students with special needs. Federal policy needs to understand this and find ways to address the problem. One need only look at the experience of VEDS to see the consequences of failing to understand the importance of this distinction.

In brief, postsecondary vocational education represents uncharted waters for national research and federal policy. At the risk of sounding extreme, I would venture to say we know nothing about vocational education at this level. Successful reauthorization will depend on knowing a great deal more. This need not be an expensive or time-consuming venture. Most of the data required to answer the questions outlined above are available from National Longitudinal Study of the Senior Class of 1972 (NLS-72) and High School and Beyond.

Emphasizing Outcomes as Opposed to Process

In the absence of a clear understanding of vocational education at the secondary and postsecondary levels, federal policy has in the past focused mainly on matters of process at the expense of performance. The law and regulations have gone on at great length about such issues as the appropriate distribution and expenditure of funds, the types of curricula and special services provided, the size and composition of various advisory committees, the extent to which local labor market data are to be used to expand and contract programs, and so forth. With each reauthorization, there has been an increased emphasis on access of special populations—the handicapped, economically and academically disadvantaged students, students with limited English proficiency—but with little or no attention to what access should accomplish for these students.

Elsewhere we have argued that making federal vocational education policy more effective depends on meeting at least three conditions:

- Federal resources must be concentrated on a few clearly formulated objectives;
- Legislation and regulations must become less concerned with prescribing processes and instead specify expected results and acceptable means for measuring progress toward these aims; and
- The distribution of federal funds must relate directly to performance on carefully specified outcome criteria (Hoachlander, Choy & Lareau, 1985).

The Perkins Act makes progress on the first of these; the aims of federal policy have been narrowed to improving program quality and increasing access to high quality programs for underserved students. Additionally, much (but by no means all) of the heavy prescription has been eliminated. However, what constitutes "program improvement" or increased access to "high quality" programs has no operational meaning under the new law, and hence it is impossible to assess its effectiveness.

Consequently, high on the upcoming research agenda should be work on defining some clear, quantifiable outcomes by which the performance of vocational education programs may be evaluated. Sorely needed are some direct measures of program performance rather than the indirect measures of labor market outcomes that have traditionally been the basis for evaluation. One promising avenue for research is the experience of many states and local providers with developing competency-based instruction in vocational education. How successful have they been at specifying the academic and job-specific skills required to perform effectively in different entry-level jobs and at measuring a program's contribution to the acquisition of these skills? Competency-based instruction holds the promise of being able to use program completion as one of the primary indicators of performance.[4]

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[4] Specifying good measures of program performance still must face its ultimate test in the labor market, and the specification of competencies must periodically be checked against actual labor market outcomes. These checks, however, can involve relatively small samples of students and should be conducted over time. We have developed this idea in some detail in From Prescriptive to Permissive Planning: New Directions for Vocational Education Policy, op. cit.

Funds Distribution

Good measures of program performance might greatly simplify federal funds distribution, probably the area of greatest confusion and frustration during the past 10 years. Although the Perkins Act eliminates much of the chaos created by the 1976 Amendments, it continues to rely on half a dozen set-asides to distribute funds for special populations, perpetuates meaningless and sometimes destructive matching requirements, and is virtually silent on how the 43 percent of the basic grant intended for program improvement is to be distributed to local education agencies and postsecondary institutions. The set-asides for handicapped and disadvantaged students, as well as the procedures to be used to distribute them within states, reflect how little we have learned about postsecondary vocational education and the difficulties of identifying and serving these students at the postsecondary level. Indeed, the law is virtually silent on the relative priorities to be assigned to secondary versus postsecondary in the distribution of federal funds for vocational education. Perhaps this silence reflects the view that the states are in the best position to determine this split, but given the magnitude of the postsecondary enterprise, one might expect some federal policy on this issue.

We should, of course, look carefully at how federal funds have been distributed under the Perkins Act. In addition, we need to think hard about some alternative ways to allocate these monies, especially procedures that link the receipt of funds to performance, creating incentives for program improvement. Such an approach is especially important for special populations. The current law is content to promote access and spend money on special populations without regard to whether access accomplishes anything for these students. Access, of course, is a necessary condition for success in a program, but it is not sufficient. We need to learn a great deal more about what programs are effective with special needs students and use this knowledge to allocate funds more effectively.

A Note on Data

The Perkins Act radically reduced requirements for collecting and reporting data on vocational education, recognizing the failure of the VEDS established under the 1976 Amendments. The legislation directs the Center for Statistics to make greater use of sampling methods and to collect information less frequently.

The elimination of VEDS will force researchers to rely more heavily on the various longitudinal data bases available at the federal level, especially High School and Beyond and the NLS-72. For the most part, this is a positive development, for these data sets are the most appropriate sources of information for carefully examining patterns of secondary and postsecondary course taking and untangling their complicated interaction with one another and their impacts on employment outcomes.

As powerful as these data bases are, however, they suffer from two shortcomings. First, the samples are not large enough to permit fine distinctions among different types of vocational programs. The Classification of Instructional Programs (CIP), developed by the Center for Statistics, lists some 120 "four-digit" program codes for vocational education and more than 400 "six-digit" codes. At best, the longitudinal data bases are large enough to distinguish among about 30 of the largest vocational education programs. For much research, this is sufficient, but it may not be adequate for sorting out employment outcomes, identifying characteristics of particularly effective programs, or understanding the participation rates of special populations.

Second, these data bases, while excellent for producing national estimates, are not large enough to generate state-specific information. They cannot be used, therefore, to analyze change in particular states—those having instituted major school reform, for example.

At the risk of incurring the wrath and ridicule of all those who worked so hard for its demise, I would like to suggest that some of the information from VEDS, if used judiciously, could prove useful to the National Assessment. Without doubt, the enrollment data collected by VEDS are extremely suspect, especially from the majority of states that had no automated student record systems. However, data from selected states, those known to have good data systems, may be quite accurate. If so, this would be a good source—for that matter perhaps the only source—of baseline data for some states. If some of these states are also those that have experienced major secondary school reform, one would have the necessary information for some important case studies on the effects of reform on participation rates in vocational education.

We should also not overlook the information on program completion from VEDS. Although definitions of program completion varied among states, collecting and reporting data on program completers do not suffer from the same conceptual and methodological problems that doomed the enrollment information. To my knowledge, no one ever assessed the accuracy of the completion data from VEDS. These completion data are possibly the only source of good information on the distribution of students among programs by six-digit code.

These completion data should be analyzed for yet another reason. If completion can be defined in such a way that we can live with the remaining variation among states, it is potentially an excellent source of information on program outcomes, useful for assessing the consequences of access, as well as for labor market planning generally.

Finally, the National Assessment staff must be aware that there is presently no source of up-to-date information on participation in secondary vocational education programs. The latest data available from High School and Beyond is for the senior class of 1982. The National Education Longitudinal Study (NELS), slated for 1988, will begin collecting data with the eighth grade class. Hence, NELS will not produce any secondary school transcript data until 1992, much too late for reauthorization. Consequently, the assessment should consider carefully alternative sources of current secondary data. The National Assessment of Education Progress (NAEP) is one very good source, if the high school testing can be extended to include the collection of high school transcripts.

Conclusion

Despite a long history of federal support for vocational education, federal vocational education policy has been the target of frequent attack, by those critical of vocational education and desiring to change it and by those who defend its achievements and want them expanded. To the critics, federal policy has failed to change the enterprise for the better; to defenders, federal policy has so "overregulated" the uses of federal funds that the money cannot be used effectively. As is often the case in such debates, both sides can make some telling points, and both can agree that an overhaul is in order.

In this paper, we have argued that an effective overhaul will depend on greatly improving our understanding of vocational education and what we expect it to accomplish at different points in students' educational and occupational careers. Getting clear about desired outcomes is the first step in moving toward policy that is simultaneously less prescriptive and more effective. To this end, the upcoming National Assessment of Vocational Education can make an important and lasting contribution.

Appendix

Table 1 lists the classification of courses used to develop the taxonomy of vocational education displayed in Figure 1 of the main text.

Table 1

Classification of Vocational Education Courses

A. Not Occupationally Specific

1. **Basic Skills**

   Business English I and II (07.0411, 07.0412)
   Business Mathematics I and II (07.0171, 07.0172)
   Business Economics (06.0511, 06.0500)
   Typewriting I (07.0711)

2. **Career Exploration**

   Junior Achievement (08.0321)
   Career Exploration (32.0103)
   Work Experience (32.0104)
   Work Experience Advanced (32.0105)
   Co-op Ed. I and II (32.0106, 32.0107)

3. **Industrial Arts**

   Industrial Arts (21.0101 to 21.0120, 21.0126, 21.0100)
   Architecture (04.0211 to 04.0221, 04.0200)
   Communication Technologies (10.0111, 10.0121)
   Cosmetology I (12.0411)
   Home Maintenance and Repair (46.0441)
   Auto Mechanics I (47.0621)
   Consumer Auto (47.0651)
   Mechanical Drawing I (48.0111)
   Leatherwork (48.0311)
   Metal I (48.0511)
   Woodworking I (48.0711)
   Crafts - Printmaking (50.0291)
   Fine Arts - Silk Screen (50.0721)

4. **Consumer and Homemaking**

   Consumer and Homemaking Econ. (20.0111 to 20.0192, 20.011100)

B. Occupationally Specific

1. General Introductory

Agribusiness, Intro. (01.0111)
Agricultural Production, General (01.0311)
Agricultural Sciences, General (02.0111)
Business Introduction (06.0111)
Business Law (06.0121)
Business, Independent Study (06.0131, 06.0100)
Banking and Finance (06.0311, 06.0300)
Computers in Business (07.0311)
Distributive Ed. I (08.0711)
Health Occupations I (17.0511)

2. Specific Introductory or Advanced

Agriculture

- Argic. Business and Mgt. (01.0121 to 01.0181, 01.0100)
- Agric. Mechanics (01.0211 to 01.0271, 01.0200)
- Agric. Production (01.0312 to 01.0331, 01.0300)
- Agric. Services and Supplies (01.0511 to 01.0521, 01.500)
- Horticulture (01.0611 to 01.0681, 01.0600)
- Agric. Sciences (02.0121 to 02.0124, 02.0100)
- Animal Sciences (02.0211 to 02.0281, 02.0200)
- Plant Sciences (02.0411 to 02.0423, 02. 0400)
- Soil Sciences (02.0511 to 02.0521, 02.0500)
- Conservation and Regulation (03.0211, 03.0200)
- Fishing and Fisheries (03.0311, 03.0300)
- Forestry and Rel. Sciences (03.0511, 03.0512, 03.0500)
- Wildlife Mgt. (03.0611, 03.0621, 03.0600)

Business

- Bus. Ed., Cooperative (06.0141)
- Bus. Admin. and Mgt. (06.0411, 06.0400)
- Small Bus. Mgt. (06.1811, 06.0800)
- Acct., Bookkeeping (07.0111 to 07.0162, 07.0100)
- Banking and Rel. Financial (07.0211 to 07.0231, 07.0200)
- Bus. Data Processing (07.0321 to 07.0361, 07.0300)
- Secretarial and Related (07.0611 to 07.0671, 07.0600)
- Typing, Gen.Off. (07.0712, 07.0713, 07.0731 to 07.0742, 07.0700)

Marketing and Distribution

- Institutional Mgt. (06.0711, 06.0712, 06.0700)
- Insurance and Risk Mgt. (06.0811, 06.0800)
- Marketing Mgt. and Research (06.1411, 06.1400)
- Real Estate (06.1711, 06.1700)
- Small Bus. Mgt. and Ownership (06.1811, 06.1800)
- Apparel and Access, Mkting. (08.0111, 08.0121, 08.0100)
- Entrepreneurship (08.0311)
- Floristry, Farm and Garden Mkting. (08.0511, 08.0500)
- General Mkting. (08.0712 to 08.0711, 08.0700)

Transp. and Travel Mkting. (08.1111, 08.1100)
Vehicle and Petroleum Mkting. (08.1211, 08.1221, 08.1200)
Advertising (09.0211, 09.0200)

Health
Dental Services (17.011 to 17.0132, 17.0100)
Medical Laboratory Technol. (17.0311, 17.0312, 17.0300)
Mental Health/Human Services (17.0411, 17.0421, 17.0400)
Misc. Health (17.0521 to 17.0591, 17.0500)
Nursing-Related Services (17.0621 to 17.0651, 17.0600)

Occupational Home Economics
Interior Design (04.0511)
Child Care and Guidance (20.0211 to 20.0251, 20.0200)
Clothing, Apparel, Textiles (20.0311 to 20.0391, 20.0300)
Food Prod., Mgt., & Services (20.0411 to 20.0481, 20.0400)
Home Furnishings and Equip. (20.0511 to 20.0571, 20.0500)
Institutional, Home Mgt. (20.0611 to 20.0661, 20.0600)

Trade and Industry
Communication Technologies- Photog. (10.0131, 10.0132)
Dry Cleaning and Laundering (12.0111, 12.0100)
Personal Services (12.0412 to 12.0431, 12.0400)
Civil Technologies (15.0211, 15.0200)
Elec. and Electronic Tech. (15.0311 to 15.0332, 15.0300)
Electromechanical (15.0411, 15.0421, 15.0400)
Environmental Control Tech. (15.0511, 15.0500)
Industrial Production Tech. (15.0611, 15.0631, 15.0600)
Quality Control and Safety (15.0711, 15.0700)
Mining and Petroleum Tech. (15.0911, 15.0921, 15.0900)
Ind. Arts Coop. Train. & Exp. (21.0110 to 21.0112)
Ind. Arts—Mach. Shop (21.0121 to 21.0125)
Masonry (46.0111 to 46.0121, 46.0100)
Carpentry (46.0211 to 46.0213, 46.0200)
Electrical Install. (46.0311 to 46.0321, 46.0300)
Misc. Construct. Trades (46.0411 to 46.0431, 46.0400)
Plumbing (46.0511 to 46.0500)
Constr. Trades, Other (46.9900)
Elec. and Electronics Repair (47.0111 to 47.0171, 47.0100)
Heating, Air Cond., Refrig. (47.0211 to 47.0212, 47.0200)
Ind. Equip. Maint. & Repair (47.0311 to 47.0321, 47.0300)
Misc. Mech. & Repair (47.0411 to 47.0431, 47.0400)
Stationary Energy Sources (47.0511 to 47.0521, 47.0500)
Vehicle and Mobile Equip. (47.0611, 47.0612, 47.0622 to 47.0642, 47.0661 to 47.0692, 47.0600)
Precision Production (48.0112 to 48.0152, 48.0100)
Graphic and Printing Commun. (48.0211 to 48.0251, 48.0200)
Leatherwork. & Upholstering (48.0312 to 48.0331, 48.0300)
Precision Food Prod. (48.0411, 48.0400)
Precision Metal Work (48.0512 to 48.0552, 48.0500)
Precision Work, Asst. Mater. (48.0611, 48.0612, 48.0600)
Woodworking (48.0712 to 48.0732, 48.0700)

Vehicle and Equip. Operation (49.0211, 49.0200)
Water Transportation (49.0311 to 49.0321, 49.0300)

Technical

Communications Tech. (10.0141 to 10.0181, 10.0100)
Computer Programming (11.0211 to 11.0251, 11.0200)
Data Processing (11.0311 to 11.0313, 11.0300)
Industrial Production Tech. - Chemical (15.0621)
Medical Lab. Tech. - Chemical (17.0321, 17.0322, 17.0300)

References

The Carl D. Perkins Vocational Education Act, P.L. 98-524, Section 521(31).

Hoachlander, E. G., Choy, S. P., & Lareau, A. P. (1985, September). From prescriptive to permissive planning: New directions for vocational education policy. Washington, DC: National Institute of Education.

National Institute of Education. (1981). The vocational education study: The final report. Washington, DC: U. S. Government Printing Office.

U. S. General Accounting Office. (1974, December). What is the role of federal assistance for vocational education? Washington, DC: U. S. Government Printing Office.

COMMENTS ON THE FEDERAL ROLE IN THE VOCATIONAL EDUCATION AND IMPLEMENTATION OF THE CARL D. PERKINS ACT: A DISCUSSION

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Division of Career and Vocational Education
School District of Philadelphia

It is from the perspective of a practitioner and service deliverer that I couch my remarks about the presentations by Richard Elmore and Gareth Hoachlander. Both papers and presentations were excellent ones and remarkably in agreement.

One speaker, Dr. Richard F. Elmore, focused on two designs for measuring the implementation of the federal vocational education legislation. One he referred to as the "compliance" design; the other, "capacity." While "compliance" in and of itself may not have a causal relationship to the quality of performance, it does have a strong general causal relationship—that of simply causing the activity to have taken place, the results of which may or may not have an effect on program improvement. More often than not, however, compliance does affect individual student performance.

If Congress, for example, intended to put more emphasis on serving the special populations (disadvantaged, handicapped, speakers of other languages and cultures, teen-age parents, etc.) there needs to be some examination of the extent to which these populations were served by the service deliverers prior to the provision of targeted set-aside funds; and to what extent they are being served now by Perkins Act funds. This is an issue of compliance with the Act.

To address this issue, we need to ask what were the achievement and performance rates of the targeted populations prior to the treatment (Perkins Act funds) and what were those rates after treatment—compliance in use of the set-aside funds? Surely, most local education agencies can supply these data, since compliance with reporting requirements (at least in my state) mandates recording and reporting such data as a part of the required evaluation component of each application. Also, where there was compliance with the Act, we should look at whether it caused an increase in the local education agency's capacity.

For example, in the Philadelphia School District (the local education agency that has been determined by the state to have the largest percentage of special populations in the state), the 1985-86 Perkins Act entitlement for the disadvantaged set-aside (including that for limited English proficient students) was $1.4 million. However, because of the District's economic status, only $400,000 could be identified from the District's Operating Budget for the required matching funds. In spite of not being able to utilize its full entitlement of $1.4 million, did the District attempt to comply?

Did it increase its capacity (even if only by $400,000 to $800,000) with matching funds? The answer is a clear yes.

For the 1986-87 year, in order to capture more of this year's entitlement (which, by the way, is increased by $1 million to a total of $2.2 million), the Superintendent expanded the vocational education matching funds by $500,000—not enough, but it certainly increased our capacity by matching and capturing more of the federal dollars. These monies were used to identify additional staff to provide the specialized supportive services specified in the law under Title IIA, Section 204:

a. Access: We provided information to students and parents about vocational education programs and eligibility requirements for entrance.

b. Assessment: We assessed interests, abilities, and special needs with respect to successfully completing vocational education programs.

c. Special services: Special services, including instruction in vocational education-related basic skills (remediation) and outreach services were provided.

d. Guidance, Counseling and Career Development Activities: Coordination with counseling staff and the utilization of special career development teachers provided the counseling, guidance, and career development instruction required by the Act.

e. Transition from School to Work and Postsecondary Programs: These services were provided to a greater degree than they had been prior to the availability of set-aside funds. Records including pre- and post-assessment are kept on all students served.

In my view, this Philadelphia story matches the excitement and success of the story recounted by Dr. Gareth Hoachlander in the opening statement of his paper about a rural school district in Caroline County, north of Richmond, Virginia. He stated that Ms. Fannie Page, Director of Special Education, exclaimed, "The Perkins Act has had a major impact here." I, too, feel that way about its positive impact in Philadelphia.

The importance of proven scientific approaches for designing a system that analyzes the impact of the federal role in vocational education should not be minimized or discounted. That is not what I am suggesting, by my previous illustrations. But, because we are attempting to determine (measure) the effect of the Act upon improving one of the nation's most valuable resources—human resources—I am suggesting (1) that we focus a major portion of the design on the product and (2) that we look to the local service providers to determine, if possible, what changes have taken place in the receiver of services—the student.

Dr. Elmore defines the capacity design approach as "looking at implementation (of the Act) from the point of view of problem-solving in delivery-level organizations." He further states that statutes set the frame of reference for determining which problems are important and what outcomes are regarded as success. In discussing the two design approaches, Dr. Elmore concludes, as I have illustrated, that "in reality, any study that is responsive to the congressional mandate will incorporate elements of both approaches . . ."

The next portion of his paper eloquently identifies and discusses some of the special problems associated with vocational education which, by the way, were also discussed in Dr. Hoachlander's paper. Dr. Elmore couched the problems in a historical perspective and compared them with the norm of other industrialized countries. These same problems were identified in The Unfinished Agenda, the National Commission's Report on Secondary Vocational Education.

In the latter part of his paper and presentation, Dr. Elmore offers some design recommendations. He suggests:

a. A survey to determine compliance;

b. Components to describe and analyze examples of success in key federal objectives at the regional and local levels, utilizing case studies to show how statutory requirements constrain and reinforce successful programming; and

c. A series of studies that look at the individual student as the unit of analysis.

In general, he leans toward capacity rather than compliance design.

Dr. Hoachlander, too, provides an historical accounting of the various Acts, their relationship to compliance, the difference in emphasis or foci of the Acts, the frequent mismatches between the ends of federal policy and the means relied upon to realize them, and the interdependency of state and local policies, practices, and resources.

He makes a case for a better understanding of the vocational education enterprise in what he refers to as a taxonomy of vocational education courses—"occupationally specific and not occupationally specific." He believes that using such a taxonomy eliminates isolating vocational education students from all other aspects of secondary education.

I applaud this effort, for if we really examine what has happened to a large percentage of students (especially disadvantaged and minorities) who elect, and I underscore elect, a vocational preparation, we find that the problem lies in two broad areas. I refer to these as (1) a denial of access to higher order basic skills in their general educational program and (2) social promotion of this population in the general education program by chronological age, not by demonstrated mastery of subject matter.

Let me illustrate. Yesterday I made a statement in one of the earlier sessions about the kind of general education a student enrolled in a dry cleaning program should have. Let me attempt to clarify my point. Traditionally, those persons responsible for scheduling courses at the eighth or ninth grade level almost always place students into general math instead of algebra, if the student has listed a vocational program as a career objective. Why? I propose that it is because of their perception of what is needed to matriculate through vocational education. Every student, regardless of his or her ultimate career choice, should be scheduled into the highest level of a basic skills course (academic courses) he or she is capable of pursuing.

If this were done, vocational education would not be saddled with or accused of not preparing students for the labor market. It is very rare that an employer criticizes the vocational education product for lack of vocational skills. It is almost always that they do not have good basic skills, analytical and problem-solving skills, work ethic, etc. All of these desired skills could be acquired if vocational education students were prepared and given the same opportunity as academic students to enroll in higher level courses.

Another reason we need to examine what basic education courses vocational education students are scheduled into is that vocational education students cannot get into apprenticeship programs unless they can pass the admission test. The test to be a pipefitter for example, requires a knowledge of algebra, geometry, and physics. That is why we, in Philadelphia, and educators in many other urban districts end up referring students from the academic course, usually college bound, to apprenticeship programs.

Something is wrong with what is going on in vocational education, ladies and gentlemen! Perhaps this is why Dr. Hoachlander concluded "that participation in secondary vocational education appears to have little or no impact on the employment prospects of participants." As he proceeds, Dr. Hoachlander identifies a number of issues to consider in developing an assessment design for both secondary and postsecondary vocational education. He discusses the need to emphasize outcomes as opposed to processes—a position that is in total agreement with Dr. Elmore's. I, too, strongly support this position. In discussing funds distribution, Dr. Hoachlander refers to the "meaningless and sometimes destructive matching requirements."

I believe that the intent of Congress was a justified one and was not meaningless. However, I do agree that the matching requirement, although it did to some extent help our district increase its capacity, did not achieve its intended effects. It is my understanding that Congress expected that the matching requirements for special populations would generate more money for the group of students greatest in need. However, the irony of this good intention is the fact that those urban and rural districts who had the greatest need were the same districts that had the least resources for matching.

In conclusion, Dr. Hoachlander has made a strong case for "improving our understanding of what vocational education is and what we expect it to accomplish at different points in students' educational and occupational careers." Both he and Dr. Elmore have traced the historical federal role in vocational education and the elements to be considered in any assessment of the Perkins Act. I strongly recommend that you read their papers. You will be in for a professional "treat."

COMMENTS ON THE FEDERAL ROLE IN VOCATIONAL EDUCATION AND IMPLEMENTATION OF THE PERKINS ACT

Charles W. Radcliffe
Government Relations Counsel

I do not feel particularly well suited to the task of reacting to papers on the federal role in vocational education, because for 20 years or so I was one of the actors in defining and shaping that role. The transition from actor to critic has not been an easy one; the new role is far more frustrating, for obvious reasons. It also entails some danger of becoming tedious about what we did, why we did it, and what was thereby accomplished in the past, when our proper concern is with the present and the future.

So I shall begin by being tedious. Gareth Hoachlander has presented a thoughtful and useful analysis of the impact of the federal role and of the things we must better understand about vocational education if we are to make it more effective. But he is quite wrong in his assertions that the principal thrust of the 1963 Act was to increase nonfederal support and improve access for students with special needs.

Those goals were ancillary to the overriding intent of the 1963 Act: to alter radically the pattern of federal support for vocational education in an attempt to make it relevant to the employment and training needs of the second half of the century. The Act broke the mold of federal aid for narrowly defined and limited categories of occupations and opened it up for all occupations not requiring a baccalaureate (or higher) degree for entrance. Nonfederal support did increase dramatically after 1963, but programs designed for special populations did not do so until after 1968.

I dwell on the history because the circumstance confronted by those of us who worked on the 1963 Act was not altogether unlike that confronting those who will be responsible for revising the Perkins Act. We were attempting then to utilize a thoroughly inadequate and outmoded program to address education and training needs of a work force and an economy for which it was not designed. Merely tinkering with the existing structure would not do that job; it had to be completely overhauled and drastically changed. What I want to suggest to the people running the National Assessment is that tinkering will not suffice to give guidance to the next reauthorization. Given the circumstances of our economy, the changing job market, and the circumstances in which we find vocational-technical education, we are going to have to think and act very boldly.

It was the 1968 reauthorization--after a thorough study of the progress and unmet needs under the 1963 Act--that specifically focused on special populations and postsecondary education as well as broadened citizen participation at both state and national levels in the monitoring and evaluation of vocational education.

The 1976 reauthorization came at a time when the essential institutional base for genuinely effective occupational education and training had been expanded exponentially from that available in 1963. The challenge was to use these resources effectively. Observers tend to focus on the somewhat excessive prescriptiveness of that Act and its seeming obsession with sex equity issues. Far more important, in my view, was its creation of a National Center for Research in Vocational Education and the structure for state and national occupational information systems through National Occupational Information Coordinating Committees (NOICC) and State Occupational Information Coordinating Committees (SOICC). Both were essential elements of any systematic attempt to relate the actual practices of vocational-technical education to the requirements of the job market in a volatile economy. But we are not giving the support to either of these innovations—both of which should have been initiated decades before 1976—that they urgently require.

I am not at all enthusiastic about the Carl D. Perkins Act. I think the bill that Chairman Perkins sponsored and guided through the House in 1982 was far superior to the final product, and I am convinced that had he lived to chair the House-Senate conference, we would have had a far more effective bill than the one that bears his name.

The 1982 Act correctly read the NIE study findings that we cannot spread limited federal funds over the whole vocational enterprise and hope to change it very much. But in placing the major emphasis on serving special populations, rather than upon changing and improving programs, it put the cart a considerable distance in front of the horse. As Mr. Hoachlander points out in his paper, we need to think more clearly about the quality of programs to which we are affording increased access by those who need special help. I would go farther and say that there is a profound national interest in increasing the quality and effectiveness of vocational-technical education available to all our citizens, and that improving access for special populations is an important, but wholly subsidiary, concern.

As I see the problems that now must be faced squarely, they seem far less daunting, but no less demanding of drastic action, than those of 1963. The pace of technological change and economic dislocation increases year by year. Fortunately, there are multiple avenues for people to use in finding a productive place in the work force. One of these is effective vocational-technical education. But whereas in 1963 it was a largely ineffective anachronism that could just as well have been by-passed in our Congress' attempt to deal with the urgent need to modernize our work force, it is today the indispensable cornerstone of any national effort to that end.

Let me digress a bit, too, about the Manpower Demonstration and Training Act (MDTA), the Comprehensive Employment and Training Act (CETA), and the Job Training Partnership Act (JTPA). I've heard for two days now what I consider to be misconceptions about the relationship of those programs to vocational education, although one of the speakers up here quite correctly surmised that we could not have put MDTA into the public school system under vocational education in 1962-63 because there was nobody there to do the job. Vocational education back then was about 70 percent high school enrollment—two-thirds of which was in agriculture or home economics with virtually no postsecondary component. More importantly, it had virtually no capacity to deal with adults; thus it simply could not be given that job in 1963.

The other point I'd like to make is that I've heard JTPA described as a parallel delivery system. I think that really is wrong. It is not a training delivery system at all. Vocational-technical education delivers training. The MDTA-CETA-JTPA system is really a brokerage system that does not deliver training but arranges for it through a variety of sources, the main one being public vocational-technical education. Frankly, I like that arrangement. I have seen it in practice in my own state. I like it very much for the reason that job training resources are very uneven in this country—as everybody has remarked for two days. I don't want to dwell on this too long, but, for example, in Baltimore City handing JTPA programs over to the vocational schools would be an absolute fiasco and disaster. In Baltimore County, however, doing just that works very well. So this is not a delivery system but a brokerage system, and I rather like the way it is able to utilize the best resources available for the purpose it serves.

Our problem now is not to create new institutional capacity, or new administrative structures, but to learn how to use what we have effectively. More precisely, it is how to use the leverage of very limited federal funds to bring about necessary improvements. It is important, as Mr. Hoachlander has emphasized, that we understand what vocational-technical education is all about and how it functions in the real world outside congressional committee rooms. It is also very important that we understand what we must have from that enterprise, and what it somehow can be brought to produce.

I have some modest suggestions. Let me quickly point out that these are based, not just upon 20 years as a committee counsel listening to all those scholars who had read the literature, but also on a lot of first-hand observation of programs both in this country and abroad, including three years' service on a local vocational-technical advisory council, making a national study of occupational information systems for NOICC, and heading a year-long study of program articulation and linkages in vocational education, job training, and supporting programs in Maryland conducted for our

Governor's employment and training council by the University of Maryland, Baltimore County.

From this background, meager as it is, I have formed some pretty firm convictions, to wit:

(1) The most important preparation for employment in any field today is a solid grasp of the basics of reading, writing, and computation, which should be accomplished before entry into vocational-technical programs, which should not start earlier than the eleventh year in school.

(2) High school vocational education is widely regarded by students, parents, and administrators as a dumping ground for kids who aren't making it in school, because in very large part it is precisely that.

(3) There is very little genuine cooperation between secondary and postsecondary vocational-technical institutions and programs, and the linkages with other job training and support programs in most places range from weak to nonexistent.

(4) Despite what Paul Peterson said yesterday, the federal vocational education legislation has had a profound and beneficial impact upon the whole enterprise, and, if we choose wisely in directing the federal effort, it will continue to do so.

(5) Business and industry involvement in vocational education—one of the vital elements in program improvement—currently is at a very low level, and is having a very small impact on policy.

(6) Governance—the issue of where administrative responsibility is lodged at the state level—is a major problem in vocational education—and will be greater if we get serious about concentrating funds on the most critical needs for program improvement.

If I could draft the next reauthorization bill, and someone would give me until three weeks from now to finish it, here are some of the directions it would take:

FIRST: 75 percent or more of federal funds would flow into upgrading curricula, equipment, and instructional staff; that is, into program improvement.

SECOND: Only occupationally specific programs would be supported—and funds would flow on a program basis as suggested yesterday. Competency-based instructional programs would be encouraged.

THIRD: Strong preference for federal funding would be shown to those programs genuinely articulated in a two-plus-two linkage spanning the last two years of secondary and two years of postsecondary school.

FOURTH: Federal funding for consumer and homemaking education would be terminated.

FIFTH: Set-asides for disadvantaged, handicapped, and postsecondary programs would be terminated and replaced by some form of assurance that these needs would be met programmatically; the fundamental needs of disadvantaged and handicapped students for help in gaining proficiency in basic academic subjects would be dealt with through other and more appropriate legislation already in place.

SIXTH: Vocational work study would be replaced, wherever it is feasible to do so, with a close tie-in to a vastly expanded apprenticeship program.

SEVENTH: The National Center and NOICC/SOICC would be further strengthened, and the various state advisory councils for vocational-technical education, JTPA, and adult education would be combined into one group, appointed by and responsible to the governor, with responsibility for covering the whole effort to help prepare people for employment.

EIGHTH: A voucher system would be implemented for vocational education, at least on a test basis, which would permit students to attend proprietary and other schools of their choice.

FINALLY: Further study would be authorized on the issue of whether federal funds should continue to be used for high school programs, such as agriculture, auto mechanics, and distributive education, that are not directly linked with postsecondary programs in a serious career sequence, or whether funds should instead be allocated to pretechnical programs with a strong academic flavor in accord with urgent national priorities.

I'm going to finish with this: One thing really bothered me in working with the Congress and listening to hundreds of hours of testimony: the concept that because something is good, it's a federal responsibility to provide it. We've done that too often with vocational education. It was done in a lot of other fields, too. I think the vocational agricultural programs often are among the best. I think consumer and homemaking education, when it is well done, is certainly worthwhile. But these are things for the most part that state and local funds adequately support. My point is to narrow what we do with the federal funds to the things that we can do and ought to do most effectively in the interest of the people in this country to create a highly skilled and fully competitive work force. A profound national interest—and, I would argue, the national security interest of the United States—is directly involved. That should be our overriding concern as we evaluate existing vocational-technical programs and chart the course ahead for federal participation in them. I believe this conference has been a constructive beginning in an attempt to make an objective evaluation, and I very much appreciate the opportunity to have participated in it.

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ions. From 1963-1983 he was Republican counsel to